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ANNUAL REPORT  
of the  
DEPARTMENT OF PUBLIC WORKS  
CITY AND COUNTY OF  
SAN FRANCISCO

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Fiscal Year Ending June 30, 1944



ANNUAL REPORT

of the

DEPARTMENT OF PUBLIC WORKS  
City and County of  
San Francisco

Fiscal year ending June 30, 1944

Roger D. Lapham

Mayor

Thomas A. Brooks

Chief Administrative Officer

Harry C. Vensano

Director of Public Works

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# CITY AND COUNTY OF SAN FRANCISCO

DEPARTMENT OF PUBLIC WORKS  
280 CITY HALL  
DIRECTOR'S OFFICE

September 30, 1944

To the Honorable Thomas A. Brooks  
Chief Administrative Officer  
City and County of  
San Francisco, California

Dear Sir:

As provided in the Charter of the City and County of San Francisco, I herewith submit the Annual Report of the Department of Public Works concerning the operation and activities of the various bureaus in this Department during the fiscal year ending June 30, 1944.

The Department of Public Works, as set up under the provisions of the Charter on January 8, 1932, is composed of nine bureaus under the administration of the Director of Public Works. These nine bureaus consist of: General Administrative Office, Bureau of Engineering, Bureau of Architecture, Central Permit Bureau, Bureau of Building Inspection, Bureau of Sewer Repair, Bureau of Streets, Bureau of Building Repair and Maintenance, and Bureau of Accounts.

The work of all bureaus has been greatly curtailed by the loss of qualified personnel and lack of critical materials which are needed in the war effort. At the present time seventy-nine employees are in the Armed Forces, fifteen in the Maritime Service, and a considerable number of mechanics and other craftsmen are on leaves of absence for work in war plants. It has been difficult to replace these employees with new personnel having the proper training and educational requirements. Because of priority ratings for various materials, new construction has been held to a minimum; and it has been difficult to take care of general maintenance.

Respectfully submitted,

*H. C. Vensano*

H. C. Vensano, Director  
Department of Public Works

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**MAYOR**

ROGER D. LAPHAM

**CHIEF  
ADMINISTRATIVE  
OFFICER**

THOS. A. BROOKS

# ORGANIZATION CHART

## DEPARTMENT OF PUBLIC WORKS 1943-1944

CITY AND COUNTY OF SAN FRANCISCO

### DEPARTMENT OF PUBLIC WORKS

DIRECTOR

H. C. VENSANO

ASS'T DIRECTOR SIDNEY J. HESTER

GENERAL OFFICE

BUREAU OF ENGINEERING

CITY ENGINEER

JOHN J. CASEY

BUREAU OF ARCHITECTURE

CITY ARCHITECT

DODGE REIDY

BUREAU OF BUILDING INSPECTION

SUPERINTENDENT

JOHN G. LITTLE

BUREAU OF STREETS

GENERAL SUPERINTENDENT

PRESTON W. KING

BUREAU OF SEWER REPAIR

SUPERINTENDENT

EMILE MUHEIM

BUREAU OF BUILDING REPAIR

SUPERINTENDENT

RODERICK CHISHOLM

BUREAU OF ACCOUNTS

SUPERVISOR

FRANK W. MCKENZIE

CENTRAL PERMIT BUREAU

HEAD CLERK

SYLVAN J. ROSENBLUM



DEPARTMENT  
OF PUBLIC WORKS  
DIRECTOR  
H. C. VENSANO

CITY ENGINEER  
JOHN J. CASEY

ASSISTANT  
CITY ENGINEER  
SHERMAN P. DUCKEL

# BUREAU OF ENGINEERING

## DEPARTMENT OF PUBLIC WORKS ORGANIZATION CHART 1943-1944

### DIVISION OF DESIGN

CHIEF CIVIL ENGINEERING DESIGNER C.V. PATTERSON  
(W.H. OHMEN, Retired Oct. 1, 1943) (Acting)

#### SECTIONS

- |                                       |                             |
|---------------------------------------|-----------------------------|
| 1- STANDARDS & RESEARCH               | 8- STRUCTURAL & HYDRAULIC   |
| 2- COSTS & BUDGETS                    | 9- ELECTRICAL               |
| 3- CONTRACTS & PUBLIC RELATIONS       | 10- MECHANICAL              |
| 4- UNDERGROUND STRUCTURES & UTILITIES | 11- HIGH PRESSURE SYSTEM    |
| 5- HIGHWAYS                           | 12- WORKS PLANNING          |
| 6- STORM & SANITARY SEWERS            | 13- TRAFFIC & SAFETY        |
| 7- SEWAGE DISPOSAL                    | 14- SEWAGE TREATMENT PLANTS |
|                                       | 15- SEWAGE PUMPING STATIONS |

### DIVISION OF STREET IMPROVEMENTS ENGINEER W. C. PIDGE

#### SECTIONS

- |                           |                           |
|---------------------------|---------------------------|
| 1- ASSESSMENT PROCEEDINGS | 3- LINE & GRADE           |
| 2- SPUR TRACK PERMITS     | 4- SIDEWALKS & COMPLAINTS |

### DIVISION OF SURVEYS & MAPPING CHIEF SURVEYOR C. H. STERN

#### SECTIONS

- |            |            |
|------------|------------|
| 1- SURVEYS | 2- GRADES  |
|            | 3- MAPPING |

### DIVISION OF CONSTRUCTION ENGINEER C. M. TAYLOR

#### SECTIONS

- |                       |                           |
|-----------------------|---------------------------|
| 1- TESTING LABORATORY | 2- INSPECTION             |
|                       | 3- GARBAGE - FILL & COVER |

### ADMINISTRATIVE DIVISION OFFICE ENGINEER L. GLICK

- |                    |                              |
|--------------------|------------------------------|
| 1- OFFICE ENGINEER | 2- REPRODUCTIONS & PHOTOGR'S |
|--------------------|------------------------------|



## HONOR ROLL

### Engineering Bureau

Lawrence J. Archer  
Benjamin Benas  
Joseph Corrao  
William R. Daly  
Darrell D. Davis  
Llewellyn De Cew  
Clifford J. Geertz  
Stanley C. Gerughty  
James T. Hester  
Charles S. Hiden  
Jess L. Ingram  
Peter D. McCarthy  
Milton P. Peyre  
Ivan Sandberg  
Thomas L. Skillington  
John L. Slater, Jr.  
Michael F. Sweeney  
George E. Westlund  
Fred Winters  
Herman J. Zimmerman

### General Office

Paul Teilh

### Sewer Repair

Arthur John Brady  
Wm. J. Murphy

### Street Repair and Street Cleaning

Jack Alexander  
John J. Andichou  
James Andrus  
J. T. Barrett  
E. J. Beard  
Edward A. Buck  
Dewey C. Buckley  
George A. Bowles  
Aloysius P. Donohue  
Chester F. Chamberlin  
Fred H. Ertman  
David A. Esola  
Robert J. Hanlon  
Eugene P. Hartnett  
W. F. Johnson  
Frank W. Krause  
C. A. LaDieu  
Raymond McKeon  
Charles McFadden, Jr.  
Harold J. Nealon  
Kevin J. Nihil  
Joseph Meister  
Vicent E. Nigro  
A. W. Peterson  
Daniel Rothbaum  
Robert Steele  
John Segale  
Raymond M. Toolis  
Clarence Wilson



## HONOR ROLL

### Building Repair

Frank W. Arnald  
Claude Byrd  
George L. Carey  
John T. Collins  
Robert J. Everson  
Frank J. Green  
Wm. A. Kittler  
Cornelius F. Mahoney  
Richard W. Meissner  
John G. McCormack  
John J. Morris  
Daniel F. O'Leary  
Patrick C. Olson  
Patrick O'Neill  
Edward A. Plant  
Charles F. Quartirol  
Ivar B. Ramstead  
Frank Royston  
Jeremiah Twomey

### Bureau of Accounts

Sylvester M. Cogger  
Alvin L. Crowe  
Joseph M. Hayes  
Quock Bo Lowe  
Kevin P. Ryan  
Fred G. Thomas

### Architecture

George B. Buckingham

### Building Inspection

C. Harris Potts



BUREAU OF ENGINEERING

John J. Casey, City Engineer

BOULEVARDS, STREETS, AND HIGHWAYS

Improved Under Special Road Improvement Fund

Rail salvage and street pavement repair was done on Guerrero Street the following streets: Guerrero Street and San Jose Avenue, from Fourteenth Street to Thirtieth Street; Fourteenth Street from Valencia Street to Guerrero Street; and Fillmore Street from Broadway to Marina Boulevard; et al.

Fillmore Street between Broadway and Filbert Street - the work under way includes the removal of: the existing tracks and slot rails, inspection boxes, pulleys, all metal track appurtenances, all pavement, and wood planking. The new pavement over the whole track area will be paved with asphaltic wearing surface on a concrete base.

Fillmore Street between Filbert Street and Marina Boulevard - the rails are being removed and asphalt on concrete pavement will be placed in the trenches.



FILLMORE STREET  
Looking south from Green Street  
Previous to Improvement



FILLMORE STREET  
Looking south from Green Street  
Showing Reconstruction After Rail Removal



GUERRERO STREET  
Looking North from 22nd Street  
Showing Reconstruction After Rail Removal

Guerrero Street between Fourteenth and Twentieth Streets, and between Twenty-second and Thirtieth Streets, and Fourteenth Street between Valencia and Guerrero Streets - the rails were removed and trenches filled with asphaltic concrete pavement. Between Twentieth Street and Twenty-second Street the tracks and ties were taken up. The track area was paved with asphaltic wearing surface on a new concrete base.

The work is about 70 per cent complete, and to date \$79,000 has been expended. Contract cost will be \$113,225.

Ashbury  
Street

Between Waller and Frederick Streets. The existing asphalt on concrete pavement and sewer were removed.

A new 18-inch sewer, together with culverts, manholes, and side sewers, was built. The roadway was paved with 6-inch concrete pavement. Contract cost, \$23,684.

Jessie Street      From Seventh Street to westerly termination. The existing 5-foot by 3-foot brick sewer was abandoned and the existing curb, sidewalk, and pavement were removed. Reconstruction work included armored concrete curb and gutter, concrete sidewalk, and the roadway was paved with 2-inch wearing surface. Where required, a new concrete base was laid. A new 15-inch vitrified clay pipe sewer, together with Y-branches, brick manholes, new catch basins, 10-inch vitrified clay pipe culverts were installed. Contract cost, \$12,161.

Market Street      On Market Street between First and Tenth Streets, new concrete parking lanes and concrete gutters have been completed. Drainage structures were adjusted to conform to the new gutter grades. The asphaltic wearing surface between the new parking lane and the municipal railway right of way was planed to a conforming grade. Granite curbs were redressed and reset. Contract cost, \$56,302.



RAIL PULLER



Bernal Avenue  
Slope Repair  
East side

The existing rubble wall was removed and a new masonry retaining wall built. A 6-inch perforated vitrified clay pipe drain was installed back of the wall and covered with crushed rock. The slope was backfilled to the original alignment, and the slope area between the wall and the curb along the sidewalk above was planted as follows: the lower one-third was covered with mesembryanthemum floribundum and the upper two-thirds with mesembryanthemum equilaterale. Contract cost, \$11,071.



BERNAL CUT  
New rubble wall



THIRD STREET  
Looking north from Mariposa Street  
Showing new center island



THIRD STREET  
Looking north from 26th Street  
After reconstruction

MAJOR STREET CONSTRUCTION UNDER STATE  
SUPERVISION

Third  
Street

From Custer Avenue to 23d Street. The old pavement was removed and a new roadway was constructed and brought to the official line and grade. The cross-section includes two 38-foot roadways separated by a raised center strip four feet wide and two 10-foot sidewalks. The roadways are paved with eight inches of asphaltic concrete and two inches of asphaltic wearing surface. Seven-foot wide parking strips of hydraulic concrete, 8" thick, together with a monolithic curb were constructed.

Between Mariposa and Alameda Streets a center island was built and the roadway widened five feet on the westerly side. From Alameda Street to Fourth Street the roadway was widened 25 feet on the easterly side and five feet on the westerly side, making a total roadway width of 80 feet.

Under the same contract the Hunters Point access road from Revere Avenue and Hawes Street to Oakdale Avenue and Fitch Street (a distance of 1700 feet) a 40-foot roadway was built. The work included 12 inches of imported borrow for subgrade, four inches crusher run-base, 1-1/2 inches asphaltic leveling course, and two inches of concrete pavement, Type B, with a class "C" fine seal coat. All work was done under State supervision, at a total cost of \$328,689 of which the City and County of San Francisco contributed \$200,000.

BOULEVARDS BY JOINT HIGHWAY DISTRICTS

District #9  
Ocean Shore  
Boulevard

A section of Ocean Shore Highway, 2.6 miles in length, beginning two miles south of Tunitas and ending one mile south of Lobitas, was completed by Harms Brothers of Sacramento, October 9, 1943, at a total cost of \$325,791. The work included the construction of a graded road-bed, thirty-six feet wide, placing imported borrow in the upper portion, applying a penetration oil treatment to the road-bed and shoulders, and bituminous surface treatment to portions of gutters and dykes. A timber bridge twenty-six feet wide, consisting of thirteen 19-foot spans and one 38-foot span, on frame bents with concrete pedestals, was constructed on a 1000-foot radius curve across Tunitas Creek. Drainage facilities, road approaches, fences and other appurtenances were also constructed, furnished, or installed.

At Finney Creek a section of the highway was completed on December 4, 1943, by the California Pavement Company of San Mateo. The work performed under contract consisted of constructing a graded road-bed forty feet wide, applying a bituminous surface and a seal coat to the central portion of the road-bed, and a penetration treatment to the shoulders. Total cost, \$23,397.

District #10  
Junipero Serra  
Boulevard  
Extension

Concrete interceptor ditches have been constructed on the slopes along the highway from Cypress Lawn to Sneath Road. The work was completed September 10, 1943, by Love and Haun of San Francisco at a cost of \$4,717.

Treatment of the one to one cut slopes to prevent erosion began March 12, 1943, and was completed April 15, 1943. The slopes were covered with about six inches of loam and seeded with

rye grass, yellow and blue lupin, and California poppy. This treatment has substantially stopped erosion.

Acacia trees of several varieties have been planted along the tops of the cut slopes and in the ravines. These trees are showing a good growth and will be in bloom next spring. About 30,000 mesembryanthemum (magic carpet) slips of several colors were obtained from the Bay Bridge Terminal and from Sigmund Stern Grove. These slips were rooted at our Baden Yard and were planted all along the roadway center strip.

#### IMPROVED UNDER PRIVATE CONTRACT

The following streets were improved during the year:

Alpha Street  
Arleta Avenue to Raymond Avenue

Cambridge Street  
Silver Avenue to Stonecrest Subdivision

Westview Avenue  
Cambridge Street, easterly terminus

Iowa Street (easterly half)  
Eighteenth Street to Nineteenth Street

Iowa Street  
Nineteenth Street, 335 feet southerly

Cambridge Street  
Felton Street to Burrows Street

TRAFFIC

During the year the Traffic Engineering Section supervised the traffic striping of streets, pedestrian lane markings, installation of regulatory signs, signals, and other traffic control devices. Priorities and restrictions on metals and other materials curtailed the regular maintenance program.

A substitute paint now replaces the standard traffic lacquer for the duration. To conserve material, lines were dash-painted as in the previous year. The maintenance program included: 221 miles of lane-stripes; pedestrian lane markings at 1,452 intersections; also, 5210 words, 425 safety zones, and 197 bus stop zones were painted on the pavement, using 7,052 gallons of white traffic paint. The total cost for labor and materials was \$51,000.

Lane stripes were painted on Junipero Serra Extension from the county line to El Camino Real - being part of Joint Highway District #10 - and on the Golden Gate Bridge and its approaches, a total of 28.2 miles.

Material was not available for the installation of new standard street signs and when existing signs were damaged beyond repair they were not replaced.

Traffic signs of all types were manufactured from 3/16" fiber panels and mounted on redwood posts. During the year 157 reflectorized "Stop" signs, 153 warning and regulatory, and 266 parking restriction signs were installed. The majority of these were replacements.

Special reflectorized warning signs were installed on Geneva Avenue in the vicinity of the Livestock Pavilion, present headquarters of the 475th Quartermasters Truck Regiment. On the Great Highway between Quintara and Rivera Streets, a fence and 40 roadside delineators now guide motorists clear of the west shoul-

der which was being undermined by the surf. At the request of the Federal Housing Authorities, an investigation was made of traffic conditions in the Housing Projects in the Hunters Point area. Signs and guard rails were recommended and these are to be installed by the Housing Authorities.

At Fremont and Howard Streets and at Ninth and Harrison Streets, "Stop" and "Go" signals were installed to expedite the movement of traffic. At the intersection of Bay and Hyde Streets two actuated "Stop" and "Go" signals now control the Bay Street traffic when Hyde Street cable cars cross Bay Street.

The first three-light signals to be used in San Francisco were placed at the intersection of Third Street and Evans Avenue. Cost of labor and materials, \$1,840.

At Alemany Boulevard and Onondaga Avenue concrete traffic islands were constructed with curb reflectors; and regulatory signs were installed. These islands protect the pedestrian travel across Alemany Boulevard and guide vehicles into the proper lanes for turning.

Traffic and safety conditions were investigated at 92 intersections, and improvements were made at 54 intersections by traffic painting and the installation of regulatory signs or control devices.

Plans and specifications were prepared for the routing of vehicular traffic during street construction with adequate directional and warning signs for the following projects, most of which are in the postwar program:

- Geneva Avenue Extension
- Persia Avenue Extension
- Webster Street Extension
- Islais Creek Bridge repairs
- Twenty-seventh and Church Streets Sewerage System
- Locust and Jackson Streets Sewer Repairs
- Lombard Street Sewer Repairs - Larkin St. to Polk St.
- Union St. Sewer Repairs - Franklin St. to Van Ness Ave.
- Broderick St. Sewer Repairs - Clay St. to Washington St.
- Divisadero St. Sewer Repairs - Clay St. to Washington St.

Langton St. Sewer - Folsom St. to Harrison St.  
Ingleside Sewer - Section B  
Fifteenth and Church Streets Sewer - Section B  
Bush St. Sewer Repairs - Franklin St. to Van Ness Ave.

Origin and destination counts were made at all main traffic arteries leading into and out of the City, including the San Francisco-Bay and Golden Gate bridges, in cooperation with the State Division of Highways.

Concrete end bars were placed at 20 safety zones on Ocean Avenue from Phelan Avenue to Junipero Serra Boulevard, and at 21 locations on the north side of Lincoln Way from Arguello Boulevard to 30th Avenue. On Junipero Serra Boulevard at the northerly line of Ocean Avenue, two safety zones were enlarged and crosswalks relocated to provide better protection for school children using this intersection. On Market Street, to reduce the hazards to passengers boarding street cars on the inner tracks, safety zones have been lengthened at three intersections permitting the car on the outer track to stop at the rear of the car on the inner track. The extension of safety zones at other intersections on Market Street is being held in abeyance until unified operation of street cars has been effected.

Bus stop zones were established at 55 locations and each marked by painted stripes and a sign placed at the curb.



AUXILIARY WATER SUPPLY SYSTEM

No extensions were made to the system during the fiscal year. Plans, specifications, and estimates were made and prepared for alterations to the existing installations, made necessary by proposed street and boulevard improvements, also for the proposed new Evans Avenue Bridge.

Changes were made in the system in connection with the widening of the second section of Third Street.

Detail drawings were made for the San Francisco Fire Department, covering the various types and sizes of standard threads as used on Fire Department equipment.

Investigation and inspection were made of the condition of old brick cisterns built prior to 1908. Plans, specifications, and estimates were prepared for water-proofing those which were to be kept in service. Some were recommended to be abandoned.

Corrections were made to records and maps of the system and information regarding the various units were furnished to public utility companies and other municipal departments.

BRIDGES

Fourth St. Bridge  
over Channel St.  
Waterway

The existing north fender was removed  
and replaced by a new timber fender;  
also, some incidental electrical work

was done. Contract cost, \$15,606.

SEWERS

Lombard  
Street

Between Franklin and Octavia Streets, and between  
Laguna and Fillmore Streets. The arch and invert  
of the existing 3-foot by 5-foot main sewer was lined

with gunite 1/2-inch thick except where greater thickness was re-  
quired over depressions in the brick work to prevent noticeable  
irregularities in the finished surfaces. All open joints and  
cavities in the brick work were completely filled. Contract cost,  
\$14,588.

Ingleside  
Sewer  
Section A

The work includes the construction of a 6-foot di-  
ameter plain concrete sewer from Lyndhurst Drive  
across Junipero Serra Boulevard and Lunado Way and

through a sewer right of way to Urbano Drive. A plain 3-foot by  
4½-foot concrete sewer was built along Urbano Drive to Borica St.,  
together with reinforced concrete junction structures, one plain  
concrete taper connection, manholes, vitrified clay pipe side  
sewers, and culverts. Contract cost, \$112,271.

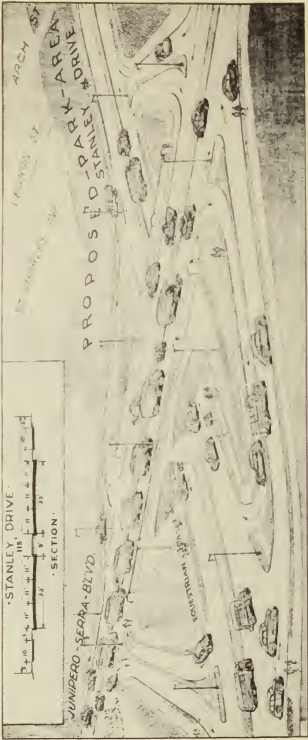
Fell Street            Between Webster and Laguna Streets.    The existing sewer was removed and replaced by an 18-inch vitrified clay pipe sewer, together with side sewers, brick manholes. The pavement was restored with a 2-inch asphaltic wearing surface on a 6-inch concrete base. Contract cost, \$17,431.

Langton Street        From Harrison Street to Folsom Street. A new 12-inch vitrified clay pipe sewer has replaced the old sewer. Brick manholes, side sewers, and 10-inch vitrified clay pipe culverts were installed. Pavement was replaced with a 2-inch bituminous surface over a 4-inch concrete base. Contract cost, \$7,327.

Hyde Street           Storm drain outfall (extension). A 24-inch cast iron pipe on timber supports was attached to the existing piling under the Hyde Street wharf. Contract cost, \$3,650.

Bush Street           Franklin to Van Ness Avenue. A new 15-inch vitrified clay pipe sewer has replaced the old sewer. Manholes and side sewers were constructed. All pavement and improvements which were disturbed by the work were restored. Contract cost, \$5,922.

Shotwell Street        On Shotwell Street from Seventeenth Street to Eighteenth Street, the old sewer was plugged and abandoned. A new 12-inch vitrified clay pipe sewer encased in concrete, together with side sewers, culverts, and manholes, was built. The old pavement was replaced with a 2-inch asphaltic wearing surface on a 6-inch concrete base. Contract cost, \$6,182.



JUNIPERO SERRA BOULEVARD  
Proposed Viaduct Over Stanley Drive

STRUCTURAL SECTION

The work during the past year was mainly the preparation of plans, specifications, and listing of quantities for a number of projects to be completed in the post-war era. Preliminary and final designs and plans were prepared for sewers, sewerage projects, bridges, viaducts, grade separations, underpasses, and other city-owned structures. This section acts in an advisory capacity to the Bureau of Architecture relative to structural design in connection with school buildings, fire-houses and other city-owned buildings.

All plans for privately owned structures which may be built that will encroach on any city street or city property are investigated. Inspection is made during the year of all major bridges, viaducts, tunnels and other structures owned or maintained by the city.

Considerable erosion has occurred along the shore-line of the Pacific Ocean paralleling the Great Highway. Changes in the shore-line caused by erosion are being recorded. Subsidence records are being kept for the site of the North Point Sewage Treatment Plant, the Sixth Street viaduct, and along the Embarcadero. The rate of settlement at Land's End is being recorded periodically. This particular area is under the jurisdiction of the Park Commission.

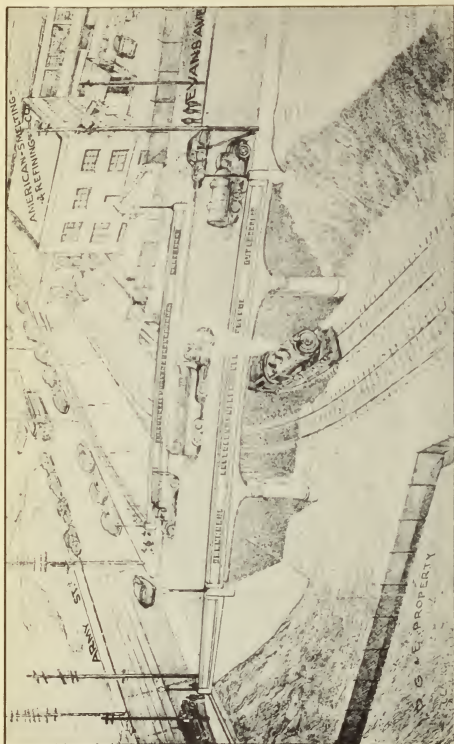
During the year, plans, specifications, and quantities were made for the following projects:

Sewers

Baker Street Outfall - reinforced concrete sewer outfall.

Twenty-seventh and Church Streets, Sec. "B" - Reinforced concrete 6'6" circular sewer. Cost, \$116,000.

Fifteenth and Church Streets, Sections "B", "C", "F", "G"



EVANS AVENUE - PROPOSED BRIDGE  
Over Western Pacific Railway Right of Way

and "H" - reinforced concrete sewer, varying in size from 2'6" x 3'9" to a 7'3" diameter circular sewer. Estimated cost, \$178,000.

Eighteenth Street Sewerage System - reinforced concrete sewer, varying in size from 2'6" x 3'9" to 7'3" circular sewer. Estimated cost, \$700,000.

Lake Merced Sewerage System - The rapid building development of this section of the City, including the Metropolitan Housing project, requires an extensive sewerage system. Preliminary plans have been made for a main trunk sewer to be built along the east shore of Lake Merced from the end of Sunset Boulevard and continuing under the Olympic Club Golf property to the Pacific Ocean. This project will include two tunnels - one 4,000 feet long under the Metropolitan Housing project, and the other 4,350 feet long under the Olympic Club. Stanley Street sewer will be extended westerly to connect with the proposed new main trunk sewer. Estimated cost, \$3½ million.

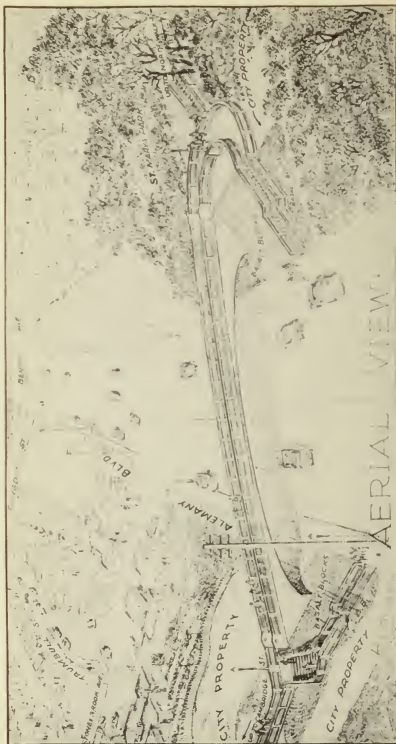
Richmond-Sunset tunnel ventilation - In order to prevent the corrosive action in the tunnel caused by sewer gases, plans were prepared for a ventilating system, including a chimney, fanroom and other miscellaneous structures.

#### Bridges, Viaducts, Grade Separations and Underpasses

Sixth Street viaduct - Preliminary plans are being prepared for a four-lane elevated reinforced concrete structure extending from Third Street over the Channel Street waterway, the Southern Pacific track yards, and to Brannan Street. Estimated cost, \$3 million to \$4 million.

Junipero Serra Viaduct - This structure will be a double rigid frame reinforced concrete viaduct and will cross over Stanley Drive. Estimated cost, \$207,000.

Evans Avenue Bridge - Plans and specifications have been



ALEMANY BOULEVARD  
Proposed Pedestrian Bridge



prepared for a continuous reinforced concrete girded bridge, spanning the Western Pacific track immediately south of Army Street. It will replace an obsolete timber structure which at the present time carries considerable heavy traffic. Estimated cost, \$55,000.

St. Mary's Bridge - A reinforced concrete pedestrian bridge will be constructed as a rigid frame, 135 feet clearance, over Alemany Boulevard. This bridge will connect the Stonecrest subdivision and other districts south of Alemany Boulevard with St. Mary's Park on the north. Estimated cost, \$20,000.

Santa Clara Avenue Underpass - Preliminary design has been completed for an underpass under Portola Drive.

Santa Rosa Avenue - Preliminary plans have been prepared for a reinforced concrete structure for the Southern Pacific track over Santa Rosa Avenue as widened.

Bayshore Freeway - Investigation was made for a connection to the Bay bridge and an extension downtown across Market Street as a substitute for the proposed Embarcadero viaduct. Studies were made for grade separations at Third and Army Streets.

Nineteenth Avenue - Preliminary plans have been prepared for the extension of Nineteenth Avenue across Golden Gate Park including a crossing at Lincoln Way and a tunnel in the park.

Alemany Boulevard and Junipero Serra Boulevard - Preliminary plans have been prepared for a one-way two-lane reinforced concrete viaduct across Junipero Serra Boulevard.

Bernal Avenue Wall - Plans, specifications, and quantities were prepared for a gravity basalt block wall to replace a section of the old wall which had collapsed as a result of a slide. Estimated cost, \$12,500.

Portola Drive - Preliminary plans have been prepared for reinforced concrete walls along the proposed widening of Portola Drive.

RICHMOND-SUNSET SEWAGE TREATMENT PLANT

Operation and maintenance of the Richmond-Sunset Sewage Treatment Plant continued satisfactorily throughout the fiscal year, the fifth full year of operation. Manpower shortage because of war conditions again affected plant operation, but not so acutely as in the preceding year.

1,547.3 million gallons of gravity flow from the Richmond district and 1,271.4 million gallons pumped from the Sunset district, for a total of 2,818.7 million gallons were treated during the year. Storm water from the Sunset district was by-passed for a period equivalent to 39.0 days, and flow from the Richmond district limited to 18 million gallons per day during storms by diversion at the 24th Avenue and Lake Street control structure, and manual adjustment of stop planks in the inlet channels at the plant. The average daily flow for the year was 9.1 million gallons for the actual time of plant operation, with average daily treated wet and dry weather flows of 9.7 and 8.6 million gallons respectively. A total of 4,062 cubic feet of screenings, 1,882 cubic yards of grit and 2,821 tons of dry sewage solids were removed. 4,096 tons of filter cake, amounting to 954 tons of dry solids were produced and 5,040 cubic yards of filter cake, estimated to have a value of \$20,500, were delivered to City Parks for use as fertilizer.

Bacteriological examinations made by the Department of Public Health for coliform organisms in the shore waters along the Great Highway, China and Baker's Beaches indicated continued satisfactory sanitary conditions.

During the winter rainy season the plant was shut down for a limited period to install new equipment in the flocculation tanks, to inspect and repair main connecting sewers, and for general plant inspection and overhaul. Channels, conduits and tanks

were inspected, sand deposits removed, and all mechanical equipment inspected, adjusted and repaired where necessary.

The bar racks operated continuously throughout the year. Approximate removal of screenings was 1.5 cubic feet per million gallons of sewage. This estimated removal is more nearly correct than in previous years, in which the estimates were based on erroneous assumptions. Screenings were again disposed of by incineration. The main air header to the diffusion lines in the channels before and after the bar racks was enlarged and additional air diffusion lines installed to better control sand deposition.

In the operation of the grit-grease tanks, grease removal was satisfactory, but grit removal as in the past was not complete. This is a result of insufficient holding time, since only two of the four grit-grease tanks are equipped instead of four as provided in the original design. Some sand was carried over and deposited in the channel to the Mixing and Sedimentation Building, and in the flocculation and sedimentation tanks. This sand was quite fine, approximately 20 per cent passing through a 100 mesh screen (.0058 inch opening).

A new drive chain was installed in the east grit-grease tank. All sand scraper chains, sprockets, shafts, and bearings showed considerable wear and will require replacement. The rubber scrapers which were worn down to the holders were all renewed. All diffuser plates were cleaned in place with technical hydrochloric acid followed by dichromate-sulphuric acid mixture. As a result, air diffusion and distribution were materially improved. The sand pump impeller, wearing rings and bearings were renewed.

Additional lighting fixtures were installed in the office and chlorinator room. A new cable was installed on the No. 1 influent recorder to correct for slight errors in recorder readings.

Sludge  
Control  
and  
Sedimentation

The flocculation tanks were drained and a total of approximately 45 cubic yards of sand removed during the winter shut-down. The original mechanical equipment which was very badly worn from sand abrasion was removed and new equipment installed. This included new drive pinions, bevel gears, sprockets, chains, bearings and shafting. The replacement bearings are of a new design using grease instead of water lubrication, with felt rings to exclude water and pressure gun fittings on grease lines extending above the tank surface. The paddles and all underwater steel were repainted with a bituminous coating. The transformer on the sludge control switchboard was replaced with one of larger capacity.

In the sedimentation tanks, floating material was removed only intermittently because of overheating of the water-spray pump motor. The effluent troughs in the sedimentation tanks showed considerable corrosion, particularly at the water surface, and had to be wire brushed and painted with a bituminous coating. It would appear to be more economical to replace these troughs with corrosion resisting materials to eliminate the considerable maintenance now required. New drive chains were installed in the sedimentation tanks, four cross collector flights replaced, all bolts on flights inspected, tightened and replaced where necessary, and eighteen new wearing shoes installed. New air operated sampling lines were installed in the sedimentation tank sumps to indicate sludge levels. The two sludge pumps were overhauled and wearing rings renewed periodically to maintain good pump performance.

Based on incomplete laboratory data, the yearly average raw sewage suspended solids were 260 ppm\* and plant effluent 65

\*parts per million

ppm, removal 75 per cent; corresponding 5-day biochemical oxygen demands were 240 ppm and 125 ppm respectively, removal 48 percent.

Odors were effectively controlled by continued pre-chlorination of the sewage at the rate of 30 pounds per million gallons. Post-chlorination was used at a rate varying from 80 to 100 pounds daily per million gallons to maintain an average residual of 0.5 ppm after a contact period of 5 minutes, except during storms or when by-passing the Sunset flow. The effectiveness of chlorination in destroying bacteria was demonstrated by the coliform index of the plant effluent, which was at all times, when post-chlorination was used, well below ten coliforms per milliliter, the limit set by the State Department of Public Health for beach waters. The bacteriological examinations were made by the Department of Public Health.

Both chlorinators were disassembled, cleaned, adjusted and reassembled during the winter shut-down. The automatic chlorine feed controls responding to variations in sewage flow operated satisfactorily throughout the year.

As in the past, stratification could not be obtained because of overloading in the single digester. This overloading was reflected in a small increase of average digester volatile content to 68.2 per cent, which, nevertheless, represented an approximate reduction of 57 per cent of the volatile matter initially present in the raw sludge pumped to the digester. The computed holding time in the digester is approximately 12.5 days, as based on the rational formula developed in the "Progress Report of the Committee of the Sanitary Engineering Division on Sludge Digestion on Standard Practice in Separate Sludge Digestion," Proceedings, American Society of Civil Engineers, January, 1937. Because of gradual loss in heating coil efficiencies, inlet water temperature to these coils was raised

to a maximum of 140° F in order to maintain the digester temperature in the range 82 to 88° F, somewhat lower than in preceding years. Metered gas production was variable, averaging about 0.6 cubic feet per day per capita of connected population. This does not account for considerable leakage through the digester seal. Approximately 1,200 cubic feet of dense, tenacious scum, consisting largely of a matted mass of matches, leaves, hair, etc., were removed through the scum overflow and by hand skimming during the winter shut-down. This material was the accumulation over an approximate five year period.

A defective turbo-mixer starter switch was replaced, and a hose bibb installed on the digester seeding line.

|                                            |                                                                                                                                                                                                   |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Elutriation<br>and<br>Sludge<br>Filtration | All sludge withdrawn from the digester was washed in the elutriation tanks. Alkalinity was reduced from an average of 2,510 ppm in the digested sludge to 465 ppm in the elutriated sludge, a re- |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

duction of 81 per cent. Carry-over of elutriated sludge with tank overflow increased somewhat because of greater volumes of thinner sludge necessarily drawn from the digester.

A trap was constructed on the sludge venturi meter line to insure full flow at the venturi throat, and the meter recalibrated. Sand deposits were removed from the elutriation tanks and mixers. Chains and sprockets in the elutriation tanks showed considerable wear and will require replacement. After inspection, two defective flights were replaced and all bolts tightened. One bucket and length of chain were removed from the elutriated sludge elevator to compensate for wear and stretching of the chain.

|                            |                                                                                                                                                                 |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sunset<br>Pumping<br>Plant | The plant operated continuously except during storms and the winter shut-down. The program of periodic pumping down and flushing the Sunset sump was continued. |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|

New bearings, sprockets and front and back turn shafts were installed in the sump sand scraping mechanism. The badly eroded

suction line from the sump to the sand pump was replaced and new cleaning rods installed; new bearings were installed and the insulation rebaked in the sand pump motor.

The No. 1 sewage pump was completely overhauled, and equipped with new impeller, shaft and wearing rings; the impeller and couplings in No. 3 sewage pump were replaced. The electric cables from the float operated switches regulating pump operation were also renewed.

Laboratory work was curtailed during the first half of the year because of lack of trained personnel.

Nevertheless, about 6,500 routine and special analyses were made during the year. Determined daily were: moisture and volatile content of raw sludge; digested and elutriated sludge moistures, volatile and pH; filter cake moisture and pH; concentration of ferric chloride solutions used for conditioning sludge before filtration.

During the last half of the year daily analyses of suspended solids and biweekly analyses of 5-day biochemical oxygen demands were made on 24-hour composites of raw sewage and plant effluent. Digester gas densities were also determined daily.

The laboratory again proved its usefulness in the efficient operation of the plant.

|                                                     |                                                                                                                                                                                                                                                         |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Miscellaneous<br>Maintenance<br>and<br>Improvements | Broken glass panes were replaced in the Pre-Treatment and Main Buildings, and metal window frames in these buildings repainted. The exterior of the Mixing and Sedimentation Building was repainted after repairing metal roof flashings and skylights. |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Interior painting was done in the Pre-Treatment Building blower room and chlorinator room, Mixing and Sedimentation Building sludge control room, Main Building boiler room, pump room

and sump, and Digester control house.

During the winter shut-down bituminous coatings were applied to underwater equipment in the inlet junction structure and flocculation tanks in addition to sedimentation tank effluent troughs, control equipment in the Sunset diversion structure, and filter cake sludge hoppers.

Sunken and improperly draining paved areas were resurfaced to grade and the pavement extended near the trash incinerator.

A leaking check valve on the City Water supply was replaced.

Summaries of main operating data for the fiscal year are given in Tables 1-4.



# RICHMOND-SUNSET SEWAGE TREATMENT PLANT

## COST OF OPERATION

| <u>Item of Expenditure</u> | <u>Total Plant Operation</u> | <u>Sewage Treatment with Chlorination</u> | <u>Sunset Pumping Plant</u> | <u>Sludge Disposal Conditioning &amp; Filtration</u> | <u>Sewage Treatment without Chlorination</u> |
|----------------------------|------------------------------|-------------------------------------------|-----------------------------|------------------------------------------------------|----------------------------------------------|
| Permanent Salaries         | \$ 39,623                    | \$ 26,257                                 | \$ 5,079                    | \$ 8,287                                             | \$ 23,855                                    |
| Temporary Salaries         | 748                          | 620                                       | 52                          | 76                                                   | 571                                          |
| Wages                      | 7,562                        | 3,991                                     | 858                         | 2,713                                                | 3,671                                        |
| Contractual Services       | 3,301                        | 2,474                                     | 472                         | 355                                                  | 2,424                                        |
| Heat, Light & Power        | 9,557                        | 4,637                                     | 4,270                       | 650                                                  | 4,237                                        |
| Plant Chemicals            | 13,353                       | 9,686                                     | -                           | 3,667                                                | -                                            |
| Materials & Supplies       | 4,935                        | 2,829                                     | 244                         | 1,862                                                | 2,732                                        |
| <b>Total</b>               | <b>\$ 79,079</b>             | <b>\$ 50,494</b>                          | <b>\$ 10,975</b>            | <b>\$ 17,610</b>                                     | <b>\$ 37,490</b>                             |

Richmond Flow - 1,547 M.G.

Sunset " 1,272 "

Total 2,819 "

Cost of operation per M.G. \$28.05

\$17.91

\$3.89

\$6.25

\$13.30

Estimated cost per capita (based on 170,000 population) 0.47 per year

4,100 tons of fertilizer estimated value \$20,500 delivered to City Parks during year.

### Additional Expenditures

|                    |                |
|--------------------|----------------|
| Plant Improvements | \$1,505        |
| Painting           | 3,774          |
| Office Engineering | 1,964          |
| New Equipment      | 1,875          |
|                    | <b>\$8,918</b> |

The Sunset Pumping Plant was shut down during storms to prevent overflow from the storm sewers, and to avoid handling excessive quantities of sand in the sump.

TABLE 1 - FLOW AND PRE-TREATMENT DATA

| Month     | Richmond | Flow MG<br>Sunset | Total  | Days By-Passed<br>Richmond | Sun-<br>set | Rain<br>Inches | (a)<br>Screen-<br>ings<br>Cu Ft | (b)<br>Grease<br>Gallons<br>Pumped | Sand Cu Yd<br>Pre-Treat. | Sun-<br>set | Chlorination<br>Lbs |        | Sewage<br>Temp<br>OF |
|-----------|----------|-------------------|--------|----------------------------|-------------|----------------|---------------------------------|------------------------------------|--------------------------|-------------|---------------------|--------|----------------------|
|           |          |                   |        |                            |             |                |                                 |                                    |                          |             | Pre                 | Post   |                      |
| July 1943 | 125.6    | 117.1             | 242.7  |                            | .03         | .02            | *350                            | 27900                              | 84                       | 60          | 7560                | 20630  | 68                   |
| Aug       | 140.6    | 127.7             | 268.3  |                            |             |                | 365                             | 27900                              | 74                       | 57          | 8190                | 21840  | 69                   |
| Sept      | 134.3    | 127.9             | 262.2  |                            | 7.77        | .95            | 352                             | 27000                              | 77                       | 49          | 7630                | 20860  | 70                   |
| Oct       | 143.0    | 101.8             | 244.8  |                            | 4.83        | 1.17           | 348                             | 27900                              | 81                       | 52          | 7450                | 17200  | 69                   |
| Nov       | 137.7    | 114.3             | 252.0  |                            |             | 2.93           | 357                             | 27000                              | 98                       | 79          | 7920                | 18100  | 68                   |
| Dec       | 154.7    | 77.0              | 231.7  |                            | 14.14       |                | 395                             | 27900                              | 131                      | 91          | 7230                | 12230  | 65                   |
| Jan 1944  | 55.6     | 16.9              | 72.5   | 22.00                      | 27.56       | 4.43           | 120                             | 8100                               | 58                       | 29          | 2170                | 2590   | 61                   |
| Feb       | 115.6    | 66.4              | 182.0  | 6.10                       | 14.52       | 5.25           | 274                             | 19500                              | 98                       | 130         | 5390                | 10610  | 61                   |
| Mar       | 151.3    | 123.2             | 274.5  |                            | 3.73        | .79            | 386                             | 27900                              | 71                       | 67          | 8450                | 20360  | 62                   |
| Apr       | 139.3    | 110.2             | 249.5  |                            | 7.03        | 2.50           | 412                             | 27000                              | 59                       | 85          | 7430                | 16940  | 63                   |
| May       | 129.6    | 144.5             | 274.1  |                            | 1.85        | .87            | 388                             | 27900                              | 89                       | 112         | 7980                | 21500  | 65                   |
| June      | 120.0    | 144.4             | 264.4  |                            | 1.31        | .41            | 315                             | 27000                              | 69                       | 82          | 7940                | 20920  | 67                   |
|           | 1547.3   | 1271.4            | 2818.7 | 28.10                      | 82.77       | 19.32          | 4062                            | 303000                             | 989                      | 893         | 85340               | 203780 | 67                   |

\* Estimated

(a) Removed by Pre-Treatment bar racks only; screenings removed from Sunset sump not included. (Removals in previous years incorrectly estimated.)

(b) Approximate removals from grit-grease tanks; does not include additional removals in Mixing and Sedimentation Building.

By-Passing: Richmond 28.10 days, shut-down for plant overhaul  
Sunset 43.73 days, plant overhaul and repairs; 39.04 days, rain.

Pre-Chlorination - 30 lbs. per MG

Post-Chlorination - 2 A.M. - 6 P.M. 100 lbs per MG

6 P.M. - 9 A.M. 80 "

No Post-Chlorination when Sunset flow by-passed

TABLE 2 - SLUDGE TO DIGESTER AND GAS PRODUCTION

| Month     | Raw Sludge to Digester |         |                | Gas Production Cu Ft |           |            | Digester Temp of |
|-----------|------------------------|---------|----------------|----------------------|-----------|------------|------------------|
|           | Callons                | % Water | Lbs Dry Solids | To Boilers           | To Waste  | (a) Total  |                  |
|           |                        |         | Lbs Volatile   | (b)                  | (b)       |            |                  |
| July 1943 | 1,608,600              | 95.72   | 577,700        | 82.6                 | 478,200   | *2,500,000 | 87               |
| Aug       | 1,797,600              | 95.58   | 667,000        | 81.2                 | 541,800   | 2,661,200  | 87               |
| Sept      | 1,718,300              | 95.29   | 680,100        | 80.5                 | 547,600   | 2,542,500  | 86               |
| Oct       | 1,499,100              | 95.42   | 576,200        | 81.4                 | 469,100   | 2,328,900  | 86               |
| Nov       | 1,425,700              | 95.45   | 545,400        | 83.1                 | 453,100   | 2,283,700  | 84               |
| Dec       | 1,004,100              | 95.72   | 361,400        | 84.6                 | 305,700   | 2,147,000  | 83               |
| Jan 1944  | 278,900                | 96.56   | 80,700         | 84.0                 | 67,800    | 864,600    | 85               |
| Feb       | 653,500                | 95.67   | 237,200        | 82.8                 | 196,300   | 1,253,100  | 88               |
| Mar       | 1,275,300              | 95.58   | 473,100        | 85.3                 | 403,200   | 2,326,400  | 83               |
| Apr       | 1,084,900              | 95.65   | 396,100        | 85.6                 | 339,200   | 2,307,600  | 82               |
| May       | 1,417,700              | 95.58   | 525,600        | 85.2                 | 448,000   | 2,262,700  | 84               |
| June      | 1,365,700              | 95.46   | 520,600        | 85.2                 | 444,000   | 2,355,500  | 88               |
|           | 15,129,400             | 95.56   | 5,641,100      | 83.2                 | 4,694,000 | 25,833,200 | 85               |

\* Estimated

(a) Does not account for gas leakage at digester seals  
 (b) Meters out for repair and recalibration

Sludge is withdrawn by gravity approximately ten times per day from the sedimentation into the thickening tanks and allowed to settle without mechanism. The supernatant is returned to the mixing tanks and thicker sludge pumped to the digester approximately six times per day.

During the winter months, the quantity of sludge removed and its per cent volatile is materially less than during normal operation.

TABLE 3 - DIGESTED SLUDGE TO ELUTRIATION TANKS

| Month     | Supernatant<br>Gallons | Bottom<br>Gallons | Average<br>% Water | Lbs Dry<br>Solids | Average %<br>Volatile | Lbs<br>Volatile | Solids<br>To Elut.<br>Solids<br>To Dig. |
|-----------|------------------------|-------------------|--------------------|-------------------|-----------------------|-----------------|-----------------------------------------|
| July 1943 | 1,668,200              |                   | 97.81              | 289,700           | 68.6                  | 198,600         | .50                                     |
| Aug       | 1,933,100              |                   | 97.86              | 342,800           | 67.9                  | 232,900         | .51                                     |
| Sept      | 1,866,800              |                   | 97.76              | 351,700           | 67.4                  | 237,000         | .52                                     |
| Oct       | 1,613,900              | 10,200            | 97.83              | 293,900           | 67.2                  | 197,300         | .51                                     |
| Nov       | 1,492,100              |                   | 97.86              | 268,400           | 68.6                  | 184,200         | .49                                     |
| Dec       | 1,091,200              | 12,800            | 98.07              | 177,200           | 69.2                  | 122,600         | .49                                     |
| Jan 1944  | 213,600                |                   | 98.56              | 25,300            | 68.5                  | 17,500          | .32                                     |
| Feb       | 613,500                | 146,000           | 98.33              | 106,500           | 64.9                  | 69,200          | .45                                     |
| Mar       | 1,065,000              | 334,300           | 98.02              | 230,900           | 66.9                  | 154,200         | .49                                     |
| Apr       | 1,257,100              |                   | 97.86              | 223,100           | 68.8                  | 153,800         | .56                                     |
| May       | 1,626,900              | 64,700            | 98.37              | 230,200           | 69.8                  | 160,900         | .44                                     |
| June      | 1,552,200              | 212,000           | 98.54              | 214,200           | 69.7                  | 149,400         | .41                                     |
|           | 15,993,600             | 780,000           | 98.03              | 2,754,100         | 68.2                  | 1,877,600       | .49                                     |

TABLE 4 - VACUUM FILTER OPERATION

| Month | Elutriated Sludge Filtered |                       | Lbs<br>FeCl <sub>3</sub> | %FeCl <sub>3</sub><br>on<br>Solids | Hours<br>Filter<br>Operated | Lbs Solids Fil-         |                           | Lbs<br>Cake<br>x1000 | Gallons Lbs Fil-             |                          | Cu Yd<br>Cake |
|-------|----------------------------|-----------------------|--------------------------|------------------------------------|-----------------------------|-------------------------|---------------------------|----------------------|------------------------------|--------------------------|---------------|
|       | Gallons<br>x1000           | % Lbs Solids<br>Water |                          |                                    |                             | Lbs<br>Solids<br>Per Hr | Sq Ft<br>Filter<br>Per Hr |                      | Sludge<br>Filtered<br>Per Hr | trate<br>Per Hr<br>x1000 |               |
| 1943  |                            |                       |                          |                                    |                             |                         |                           |                      |                              |                          |               |
| July  | 792.7                      | 97.52                 | 11640                    | 7.04                               | 199.72                      | 870                     | 4.35                      | 698.2                | 3270                         | 30.0                     | 451           |
| Aug   | 820.9                      | 97.38                 | 13890                    | 7.70                               | 211.91                      | 900                     | 4.50                      | 772.3                | 3890                         | 29.4                     | 496           |
| Sept  | 667.2                      | 96.82                 | 11530                    | 6.43                               | 169.83                      | 1120                    | 5.60                      | 751.9                | 3940                         | 29.0                     | 453           |
| Oct   | 720.9                      | 96.88                 | 11690                    | 6.12                               | 185.61                      | 1070                    | 5.35                      | 830.3                | 3880                         | 28.5                     | 476           |
| Nov   | 770.2                      | 96.83                 | 11240                    | 5.53                               | 204.43                      | 1030                    | 5.15                      | 906.7                | 3770                         | 27.6                     | 502           |
| Dec   | 685.6                      | 97.05                 | 9990                     | 5.82                               | 172.75                      | 1030                    | 5.15                      | 771.3                | 3970                         | 29.3                     | 484           |
| 1944  |                            |                       |                          |                                    |                             |                         |                           |                      |                              |                          |               |
| Jan   | 102.9                      | 96.92                 | 1490                     | 5.53                               | 25.88                       | 1080                    | 5.40                      | 102.9                | 3970                         | 29.5                     | 64            |
| Feb   | 257.7                      | 96.38                 | 4950                     | 6.27                               | 64.74                       | 1270                    | 6.35                      | 346.3                | 3980                         | 28.3                     | 204           |
| Mar   | 557.3                      | 96.53                 | 8910                     | 5.40                               | 147.88                      | 1160                    | 5.80                      | 724.0                | 3780                         | 27.4                     | 467           |
| Apr   | 660.3                      | 96.91                 | 9250                     | 5.35                               | 176.22                      | 1020                    | 5.10                      | 709.1                | 3770                         | 27.9                     | 509           |
| May   | 718.9                      | 97.00                 | 10280                    | 5.63                               | 193.24                      | 980                     | 4.90                      | 771.2                | 3720                         | 27.5                     | 509           |
| June  | 747.6                      | 97.02                 | 10490                    | 5.57                               | 201.79                      | 970                     | 4.85                      | 794.4                | 3710                         | 27.4                     | 526           |
|       | 7502.4                     | 97.00                 | 115350                   | 6.05                               | 1954.00                     | 1010                    | 5.05                      | 8191.6               | 3840                         | 28.3                     | *5151         |

\* 5040 cu yds to City Parks  
111 cu yds to Public



Sea Cliff Pumping Station



View from roof of Sea Cliff Pumping Station

MARINA SEWAGE PUMPING STATION

Tests were run on all pumps, motors, and pressure tanks; and the Bailey flow meter was completely overhauled and recalibrated. Leaks in the wall of the pump room were sealed and water-proofed. Gaskets were replaced on all check valves. Pumps were repacked every three months; and new bearings and rebuilt wearing rings were installed in pump #1. Alterations were made in the railing around the stair entrances; and a new office was built in the control room.

COMMERCIAL STREET SEWAGE PUMPING STATION

All window sills and doors were cleaned and repainted. Pumps #1 and #3 were overhauled; and the old screen basket was replaced by a new one. Minor electrical repairs were made during the year. The sump was cleaned and pumps repacked every three months.

VICENTE SEWAGE PUMPING STATION

Floors, walls, and ceilings of the station were cleaned and painted. Leaks in the walls of the pump room were sealed and water-proofed. Both pumps were repacked several times during the year. New control switches were installed in the pump room for manual control.

SEA CLIFF SEWAGE PUMPING STATION #2

The concrete steps were repaired. Cracks in the roof of the station were sealed and water-proofed. The floor and walls of the control room and the ceiling in the sump room were cleaned and painted. The Venturi meter was completely overhauled; and all pumps were repacked. A wire net fence was constructed around the lower part of the station.

## MARINA SEWAGE PUMPING STATION

CONTRIBUTING POPULATION - 63,000

DISTRICT AREA - 1,025 ACRES

## PUMPAGE IN MILLION GALLONS:

| Month      | Total<br>per<br>Month | Daily<br>aver-<br>age | Max.<br>per<br>day | Min.<br>per<br>day | Power<br>Consumed<br>by Pumps<br>K. W. H.<br>per Mo. | Power<br>Consumed<br>by Pumps<br>cost<br>per Mo. | Net<br>Operating<br>Head at<br>Pump.<br>Feet | Million<br>Foot<br>Gallons<br>per<br>Month | K. W. H.<br>per<br>foot<br>Gallons |
|------------|-----------------------|-----------------------|--------------------|--------------------|------------------------------------------------------|--------------------------------------------------|----------------------------------------------|--------------------------------------------|------------------------------------|
| July, 1943 | 153.1                 | 4.939                 | 5.82               | 4.31               | 29,420                                               | \$ 441.30                                        | 41.5                                         | 6,354                                      | 4.63                               |
| Aug.       | 154.1                 | 4.971                 | 5.94               | 4.02               | 29,610                                               | 444.15                                           |                                              | 6,395                                      | 4.63                               |
| Sept.      | 150.3                 | 5.010                 | 5.58               | 3.24               | 28,870                                               | 433.05                                           |                                              | 6,237                                      | 4.63                               |
| Oct.       | 146.8                 | 4.735                 | 5.63               | 4.31               | 28,210                                               | 423.15                                           |                                              | 6,092                                      | 4.63                               |
| Nov.       | 125.6                 | 4.187                 | 5.43               | 3.90               | 24,130                                               | 361.95                                           |                                              | 5,212                                      | 4.63                               |
| Dec.       | 152.9                 | 4.932                 | 6.45               | 3.31               | 29,370                                               | 440.55                                           |                                              | 6,345                                      | 4.63                               |
| Jan., 1944 | 158.4                 | 5.110                 | 7.21               | 4.08               | 30,440                                               | 456.60                                           |                                              | 6,574                                      | 4.63                               |
| Feb.       | 156.0                 | 5.571                 | 8.15               | 4.23               | 29,980                                               | 449.70                                           |                                              | 6,474                                      | 4.63                               |
| Mar.       | 140.7                 | 4.539                 | 7.36               | 3.75               | 27,040                                               | 405.60                                           |                                              | 5,839                                      | 4.63                               |
| Apr.       | 138.5                 | 4.617                 | 8.10               | 3.41               | 26,610                                               | 399.15                                           |                                              | 5,748                                      | 4.63                               |
| May        | 133.0                 | 4.290                 | 5.39               | 3.49               | 25,560                                               | 383.40                                           |                                              | 5,520                                      | 4.63                               |
| June       | 130.6                 | 4.353                 | 4.59               | 3.36               | 25,090                                               | 376.35                                           |                                              | 5,420                                      | 4.63                               |

Total

Per Year 1,740

4.771 (Daily  
Average)

334,330 \$5,014.95

72,210

4.63  
(Average)

68% Average overall efficiency of each pump and its motor.



COMMERCIAL STREET SEWAGE PUMPING STATION

CONTRIBUTING POPULATION - 10,000 (Estimated)

DISTRICT AREA - 92.5 ACRES

| PUMPAGE IN MILLION GALLONS: |                 |               |                 | Power Consumed by Pumps K. W. H. per Mo. | Power Consumed by Pumps cost per Mo. | Net Operating Head at Pump. Feet. | Million Foot Gallons per Month | K. W. H. per Million foot Gallons |
|-----------------------------|-----------------|---------------|-----------------|------------------------------------------|--------------------------------------|-----------------------------------|--------------------------------|-----------------------------------|
| Month                       | Total per Month | Daily average | Max. per Day    | Min. per Day                             |                                      |                                   |                                |                                   |
| July, 1943                  | 27.47           | .886          | 1.13            | .630                                     | 3,950                                | 20                                | 549.4                          | 7.19                              |
| Aug.                        | 27.47           | .886          | 1.00            | .630                                     | 3,950                                |                                   | 549.4                          | 7.19                              |
| Sept                        | 27.69           | .923          | 1.51            | .692                                     | 3,983                                |                                   | 553.8                          | 7.19                              |
| Oct.                        | 24.92           | .804          | 1.06            | .566                                     | 3,584                                |                                   | 498.4                          | 7.19                              |
| Nov.                        | 22.49           | .750          | .97             | .605                                     | 3,234                                |                                   | 449.8                          | 7.19                              |
| Dec.                        | 25.92           | .838          | 1.25            | .642                                     | 3,738                                |                                   | 519.8                          | 7.19                              |
| Jan., 1944                  | 28.88           | .932          | 1.16            | .806                                     | 4,153                                |                                   | 577.6                          | 7.19                              |
| Feb.                        | 34.27           | 1.224         | 1.65            | .920                                     | 4,929                                |                                   | 685.4                          | 7.19                              |
| Mar.                        | 32.23           | 1.040         | 1.49            | .793                                     | 4,635                                |                                   | 644.6                          | 7.19                              |
| Apr.                        | 29.41           | .980          | 1.43            | .844                                     | 4,229                                |                                   | 588.2                          | 7.19                              |
| May                         | 36.46           | 1.176         | 1.41            | .920                                     | 5,244                                |                                   | 729.2                          | 7.19                              |
| June                        | 31.27           | 1.042         | 1.32            | .718                                     | 4,497                                |                                   | 625.4                          | 7.19                              |
| Total Per Year              | 348.55          | .955          | (Daily Average) | 50,126                                   | \$1,002.52                           |                                   | 6,971.0                        | 7.19 (Average)                    |

44% Average overall efficiency of each pump and its motor.

VICENTE SEWAGE PUMPING STATION

CONTRIBUTING POPULATION - 1000 (Estimated)

DISTRICT AREA - 51.4 ACRES

| PUMPAGE IN MILLION GALLONS: |                       |                         |                    | Power<br>Consumed<br>by Pumps<br>K. W. H.<br>per Mo. | Power<br>Consumed<br>by Pumps<br>cost<br>per Mo. | Net<br>Operating<br>Head at<br>Pump.<br>Feet | Million<br>Foot<br>Gallons<br>per<br>Month | K. W. H.<br>per<br>Million<br>foot<br>Gallons |
|-----------------------------|-----------------------|-------------------------|--------------------|------------------------------------------------------|--------------------------------------------------|----------------------------------------------|--------------------------------------------|-----------------------------------------------|
| Month                       | Total<br>per<br>Month | Daily<br>aver-<br>age   | Max.<br>per<br>day | Min.<br>per<br>day                                   |                                                  |                                              |                                            |                                               |
| July, 1943                  | 3.369                 | .109                    | .149               | .076                                                 | \$ 26.82                                         | 48                                           | 161.7                                      | 8.29                                          |
| Aug.                        | 3.802                 | .123                    | .173               | .087                                                 | 30.28                                            |                                              | 182.5                                      | 8.30                                          |
| Sept.                       | 4.040                 | .135                    | .185               | .109                                                 | 32.24                                            |                                              | 193.9                                      | 8.31                                          |
| Oct.                        | 3.938                 | .127                    | .176               | .103                                                 | 31.34                                            |                                              | 189.0                                      | 8.29                                          |
| Nov.                        | 4.312                 | .144                    | .188               | .119                                                 | 34.34                                            |                                              | 207.0                                      | 8.30                                          |
| Dec.                        | 4.003                 | .129                    | .182               | .108                                                 | 31.88                                            |                                              | 192.1                                      | 8.30                                          |
| Jan., 1944                  | 3.624                 | .117                    | .156               | .080                                                 | 28.86                                            |                                              | 174.0                                      | 8.29                                          |
| Feb.                        | 3.715                 | .128                    | .166               | .086                                                 | 29.58                                            |                                              | 178.3                                      | 8.30                                          |
| Mar.                        | 3.672                 | .118                    | .156               | .081                                                 | 29.24                                            |                                              | 176.3                                      | 8.29                                          |
| Apr.                        | 3.894                 | .130                    | .172               | .098                                                 | 31.00                                            |                                              | 186.9                                      | 8.30                                          |
| May                         | 3.705                 | .120                    | .168               | .080                                                 | 29.50                                            |                                              | 177.8                                      | 8.30                                          |
| June                        | 3.830                 | .128                    | .171               | .097                                                 | 30.52                                            |                                              | 183.8                                      | 8.30                                          |
| Total<br>Per Year           | 45.9                  | .126 (Daily<br>Average) |                    |                                                      | \$365.60                                         |                                              | 2,203.3                                    | 8.30<br>(Average)                             |

38% Average overall efficiency of each pump and its motor.

SEA CLIFF SEWAGE PUMPING STATION #2

CONTRIBUTING POPULATION - 2234 (Estimated)

DISTRICT AREA - 83.4 ACRES

| Month      | <u>PUMPAGE IN MILLION GALLONS:</u> |               |              |              | Power Consumed by Pumps K. W. H. per mo. | Power Consumed by Pumps cost per mo. | Net Operating Head at Pump. Feet | Million Foot Gallons per Month | K. W. H. per Million foot Gallons |
|------------|------------------------------------|---------------|--------------|--------------|------------------------------------------|--------------------------------------|----------------------------------|--------------------------------|-----------------------------------|
|            | Total per Month                    | Daily average | Max. per day | Min. per day |                                          |                                      |                                  |                                |                                   |
| July, 1943 | 3.23                               | .104          | .113         | .097         | 1,817.4                                  | \$ 36.35                             | 100                              | 323.0                          | 5.63                              |
| Aug.       | 3.30                               | .106          | .129         | .098         | 1,829.0                                  | 36.58                                |                                  | 330.0                          | 5.54                              |
| Sept.      | 3.31                               | .110          | .176         | .074         | 1,837.0                                  | 36.74                                |                                  | 331.0                          | 5.55                              |
| Oct.       | 3.69                               | .119          | .237         | .108         | 2,027.5                                  | 40.55                                |                                  | 369.0                          | 5.49                              |
| Nov.       | 3.76                               | .125          | .238         | .106         | 2,084.6                                  | 41.69                                |                                  | 376.0                          | 5.54                              |
| Dec.       | 4.22                               | .136          | .502         | .089         | 2,342.7                                  | 46.85                                |                                  | 422.0                          | 5.55                              |
| Jan., 1944 | 1.79                               | .058          | .274         | .049         | 1,003.6                                  | 20.07                                |                                  | 179.0                          | 5.61                              |
| Feb.       | 2.90                               | .104          | .325         | .052         | 1,671.4                                  | 33.43                                |                                  | 290.0                          | 5.76                              |
| Mar.       | 3.59                               | .116          | .494         | .078         | 2,095.9                                  | 41.92                                |                                  | 359.0                          | 5.84                              |
| Apr.       | 4.43                               | .148          | .505         | .047         | 2,560.8                                  | 51.22                                |                                  | 443.0                          | 5.78                              |
| May        | 4.04                               | .130          | .406         | .076         | 2,309.5                                  | 46.19                                |                                  | 404.0                          | 5.72                              |
| June       | 3.73                               | .124          | .234         | .095         | 2,059.4                                  | 41.19                                |                                  | 373.0                          | 5.52                              |

|                |       |                      |          |        |         |                |
|----------------|-------|----------------------|----------|--------|---------|----------------|
| Total Per Year | 41.99 | .115 (Daily Average) | 23,638.8 | 472.78 | 4,199.0 | 5.63 (Average) |
|----------------|-------|----------------------|----------|--------|---------|----------------|

56% Average overall efficiency of each pump and its motor.

PARKMERCED SEWAGE PUMPING STATION

The Metropolitan Life Insurance Company, owners of the Parkmerced Housing project, has constructed a new sewage pumping station at a cost of \$60,000. The plans and specifications for the station were checked and approved by the City Engineer's office before work was started. To enforce all stipulated requirements relative to sewage pumping stations, the work was under the supervision of an inspector from the Bureau of Engineering during the entire construction period.

Parkmerced Sanitary District comprises 201 acres. The present population is approximately 6600, and the estimated post-war population will be about 10,000. This station was built to prevent sewage from flowing into Lake Merced and polluting that body of water. All sanitary flow is pumped through a 12-inch force main 3150 feet long and lifted 100 feet into the sewerage



Exterior

system that connects with the Richmond-Sunset Sewage Treatment Plant where it is treated and disinfected.

The station presents a neat and attractive appearance, being a reinforced concrete structure. Plywood forms were used for the exterior surface and a smooth natural concrete finish was obtained. It is located on the east side of Lake Merced.



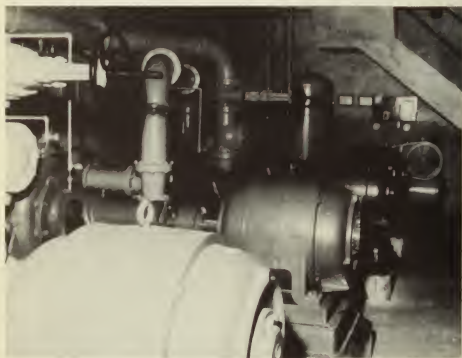
Switchboard

On the first floor, which is at ground level, are located the ventilating system, make-up water tank, surge tank, and the main switch board, dead front type, on which is mounted circuit breakers, metering instruments, time switches and relays. Electric heater, thermostatically controlled, provides heat for the control room and is so arranged as to draw a small quantity of fresh air from the outside and mix it with recirculated room air. The entire station including the sump is supplied with fresh air at all times by a ventilating fan. Fresh air is sup-

plied to the sump by means of a concrete duct extending from the sump to the roof. A manually operated venti-louvre in the wall of the control room regulates the quantity of fresh air that enters.

The pump room is directly under the control room. There are four 5-inch sewage pumps all of the same size, type, and capacity, driven by 50 HP induction motors, and arranged in two pairs so as to form two separate series pumping units. each series unit has a capacity of 1800 GPM against a total dynamic head of 131 feet. When both pairs of series units operate in parallel their combined output is 2500 GPM against a total dynamic head of 144 feet.

A float control switch actuated by a ceramic float in a cast-iron tube automatically controls the pumping units to out in and out at predetermined levels. Sewage flowing into the sump



Pump Room

can be stopped by a manually operated gate valve with a floor-stand. During heavy rains excess storm water overflows the sump weir to the settling pond which is adjacent to the southern extremity of Lake Merced.

A separate water system consists of a make-up tank, a turbine type centrifugal pump, and a pneumatic water-tank which supplies sealing water to the stuffing boxes of all the pumps and to the shredder thereby eliminating cross-connections to the City water system. Compressed air to the pneumatic water-tank is supplied by a single stage compressor driven by a motor and a V-belt drive.

A lever weighted check valve is located near the discharge nozzle of each pump and closes rapidly when the pump motor circuit is opened. A 48-inch diameter by 7-foot long surge tank which has been given an initial charge of compressed air, dampens the water hammer pressure waves. The surge tank is connected to the end of the force main (pump header) in a vertical position and without obstructions. While the pumps are being shut off, the air pressure in the surge tank forces a volume of sewage into the header, thereby dampening the water hammer waves both abnormal and subnormal. This method of water hammer control is very effective for long force mains subjected to high heads.

The incoming sewage passes through a cage screen before entering the sump. An electric hoist connected to the cage screen lifts it out of the sump and directly above into the sump room where the load of screenings is manually removed to a shredder with the aid of a collection trough and a rake. After the screenings are macerated, they are returned to the sump below and pumped out with the sewage. A service sink with hot and cold water and a hose mounted on a reel for washing the sump are located in the sump room.

Two I-beams are mounted above the pumps on which a hand-traveling crane of  $1\frac{1}{2}$ -tons capacity is installed.

This station is now owned and operated by the City. It is wholly automatic although an operating engineer is in charge to attend to general maintenance and necessary minor repairs to the equipment.



Ventilating system



## SEWAGE DISPOSAL

### PROPOSED NORTH POINT SEWAGE TREATMENT PLANT

The proposed treatment plant will serve the future requirements of the present North Point Sewerage District which includes the Marina sub-district. The North Point main sewer will carry most of the sanitary flow from the district into the plant, the balance being carried by the Marina Pump Station discharge line and the Beach Street sewer. Because of the present war-time emergency it was not possible to install a flow depth gage to measure the sewage flow in the main sewer. Consequently, water consumption records of San Francisco were used to estimate the sanitary flow.

Sewage flows for the present and future sewerage district were computed for the years 1942 and 1960 and include sanitary sewage, infiltration, and some allowance for storm water.

The average flows for the Marina sub-district were obtained from known pumping rates which include infiltration. The maximum flows were determined by maximum pumping rates including some storm water.

The sewage flows for 1942 and 1960 were estimated from the following values:

|                                   | Area in<br>Acres | Population |
|-----------------------------------|------------------|------------|
| <u>1942</u>                       |                  |            |
| Present North Point District      | 9,966            | 482,700    |
| <u>1960</u>                       |                  |            |
| Present North Point District      | 9,966            | 575,000    |
| " " " " plus 1I to 1L             | 11,148           | 594,300    |
| Ultimate " " " including 1F to 1L | 12,752           | 630,000    |

Subdistricts 1I to 1L cover the old Mission Flats district and subdistricts 1F to 1L include the old Mission Flats, Potrero, and Lower Islais Creek Districts.

| <u>North Point District<br/>in General</u> | <u>Gallons per<br/>capita per day</u> |             |
|--------------------------------------------|---------------------------------------|-------------|
|                                            | <u>1942</u>                           | <u>1960</u> |
| Average daily sanitary flow                | 75                                    | 84          |
| Maximum hourly sanitary flow               | 135                                   | 151         |

|                                              | <u>Gallons per<br/>acre per day</u> |      |
|----------------------------------------------|-------------------------------------|------|
| Infiltration with average<br>sanitary flow   | 1200                                | 1200 |
| Infiltration with maximum<br>sanitary flow   | 600                                 | 600  |
| Storm water allowance<br>(1/4" per 24 hours) | 6720                                | 6720 |

|                                                                        | <u>Million gal-<br/>lons per day</u> |      |
|------------------------------------------------------------------------|--------------------------------------|------|
| Average pumping (sanitary<br>and infiltration)                         | 6.1                                  | 8.7  |
| Maximum pumping (sanitary<br>and infiltration plus<br>storm allowance) | 16.0                                 | 22.0 |

From these rates the total sewage flows for design of the present and future North Point Sewerage District (which includes the Marina Subdistrict) were computed with the following results:

|                                   | <u>Sewage Flow M.G.D.</u> |                |
|-----------------------------------|---------------------------|----------------|
|                                   | <u>Average</u>            | <u>Maximum</u> |
| <u>1942</u>                       |                           |                |
| Present North Point District      | 50                        | 120            |
| <u>1960</u>                       |                           |                |
| Present North Point District      | 65                        | 150            |
| " " " " plus 1I to 1L             | 70                        | 160            |
| Ultimate " " " including 1F to 1L | 75                        | 175            |

From the computed sewage flows the following recommendations are made:

1. The proposed sewage treatment plant should be designed for an average flow of at least 65 M.G.D., sufficient to handle the flow of the present sewerage district until the year 1960.

2. The flow of the Southeast District should all be carried to a future Southeast Plant rather than carrying a portion

of this flow to the North Point Treatment Plant.

3. To relieve the load on the North Point Treatment Plant after the year 1960, the flow from the southern portion of the North Point District should be diverted to the proposed Southeast Plant. Chemical sedimentation and slight enlargement of the plant units may permit of some increase in capacity after 1960.

4. Investigation should be made as to the feasibility, necessity, location, area served by, and capacity of a future Southeast District Plant in order to determine what portion of the North Point District sewage may be diverted thereto in the future.

5. The maximum flow to the treatment plant will be limited by the maximum pumping capacity (probably 120 to 130 M.G.D.). Flows in excess of the pumping capacity will tend to fill the North Point main and spill at the various overflows, as at Greenwich Street, Jackson Street, etc.

6. Sewer gagings should be made to determine the actual sanitary flows.

As a result of the study of the present and probable future water consumption of San Francisco, it was found that the water consumption per capita has been constantly increasing, even prior to the national emergency. In 1930, with a census population of 634,394, the average daily water consumption was 77.2 gallons per capita. In 1940, with a population of 634,536, the capita consumption rose to 94.85 gallons. In 1942, with a population of 728,236, the consumption dropped to 90.21 gallons per capita.

|                                |                                                                                                                                                                                                                                                                           |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type of<br>Sewage<br>Treatment | It is recommended that the type of sewage treatment for the North Point Sewage Treatment Plant be similar to the Richmond-Sunset Sewage Treatment Plant, which is technically classified as primary sewage treatment. Our primary sewage treatment includes the following |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

processes: screening, grit removal, grease removal, coagulation, sedimentation, disinfection, separate sludge digestion, and sludge disposal.

The treatment processes are subdivided into two major divisions: the pre-treatment and sedimentation process, and sludge treatment process. The function of each element of the two major processes is as follows:

#### The Pre-Treatment and Sedimentation Process

|                     |                                                                                                                                                                                                                                                                                      |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pre-Chlorination    | The control of sewage odors within the plant.                                                                                                                                                                                                                                        |
| Bar Racks           | The stationary racks are for protection of plant equipment and nuisance value. The mechanical racks will remove large floating material from the raw sewage which will then either be incinerated or returned to the sewage in a physically reduced condition for further treatment. |
| Grit Removal Tanks  | Sand, detritus, etc. will be removed from the raw sewage, cleaned by sand washers, and delivered by inclined conveyors to sand hoppers to be hauled away by trucks to tidelands and deposited as fill.                                                                               |
| Sewage Lift Station | Screened raw sewage will be elevated to aerators, in order that the treated sewage can flow by gravity through the sedimentation processes, and thence through the outfall.                                                                                                          |
| Outfall             | A submarine outfall, with outlet diffusers located near the bottom of San Francisco Bay, will discharge the sewage approximately 2,000 feet from the northeast shore line of San Francisco in deep water in the channel.                                                             |
| Flocculation Tanks  | Mechanical paddles installed in continuous flow through tanks will coagulate dispersed colloidal material into settleable masses, in order to ob-                                                                                                                                    |

tain effective removal of otherwise nonsettleable colloidal material.

Sedi-  
mentation  
Tanks Coagulated colloidal material consisting mainly of organic matter will be separated from treated sewage by sedimentation. This settled material, classified as sewage sludge, is removed from the bottom of the sedimentation tanks by scrapers which deliver the sludge to hoppers.

Post-  
chlori-  
nation Contaminated water from the sedimentation tanks will be disinfected with chlorine in order to destroy the pathogenic organisms which may be present prior to discharge into San Francisco Bay through the outlet diffusers on the end of the submarine outfall.

#### Sludge Treatment Process

Sludge  
Thickening  
Tanks The watery sewage sludge collected in the sludge hoppers of the sedimentation tanks will flow by gravity to sludge thickening tanks where excess water will be removed. The thickened sludge will be discharged by gravity to sludge holding tanks.

Sludge  
Holding  
Tanks Concentrated sludge deposited in the grease removal tanks will be delivered to the sludge holding tanks and there mixed with the concentrated sludge from the thickening tanks. Grease removed in the grease removal tanks, together with scum from the surface of the sedimentation tanks, will be likewise delivered to the sludge holding tanks. Mixed sludge will be pumped either direct to the primary digesters, or to auxiliary sludge seeding and heating tanks.

Multi-  
stage  
Digestion Raw sludge will enter the primary stage where the organic matter will undergo bacterial disintegration with the consequent production of sludge gas. The partly digested sludge will flow by gravity to the second stage of the system. The sludge will be retained in the multi-stage

system for a period of 15 to 20 days, during which time the volume of sludge will be reduced approximately 50% in weight. Sludge gas will be utilized as fuel for the sludge dehydration and incineration process, the heating of digester circulating water, building heating and power generation.

**Elutriation**                      Digested sludge will be washed with effluent from the sedimentation tanks in order to remove certain ammonical compounds which are in solution. The removal of these ammonical compounds realizes an actual saving in the cost of operation of the vacuum filters.

**Sludge Conditioning**                Washed digested sludge from the elutriation tanks will flow by gravity to sludge hoppers with vertical sludge elevators. The sludge will be elevated to the conditioning room and there dosed with ferric chloride solution which acts as a coagulant and then delivered to the vacuum filters.

**Vacuum Filtration**              Conditioned digested sludge will be dewatered from approximately 96% moisture to 75% - that is from a state of fluidity to one of solid, in form of a mat, known as filter cake. The filter cake will be transported by belt conveyors from the vacuum filters to the dehydrator. The installation of sludge cake bins will allow the stripping of vacuum filters or the production of sludge cake for soil conditioning.

**Dehydration and Incineration**      Sludge cake will be dewatered from 75% moisture to approximately 10% moisture in the form of a marketable granular fertilizer or the sludge cake will be incinerated to ash when required.

A total of nine preliminary studies of plant layout plans were prepared. A summary was also prepared showing a comparison and features of the various pre-treatment schemes in order to determine the most feasible plant layout.

LOG CABIN RANCH SCHOOL

At the request of the Juvenile Department, plans and specifications were prepared for extensions to the present water supply system. This work included a new 10,000 gallon redwood water storage tank, a standby pumping unit, and a hypo-chlorinator, together with all necessary piping, alterations, and electrical work. The addition of the new water tank has doubled the amount of water available for emergency requirements at all buildings. The new gasoline engine-driven reciprocating pump provides standby pumping service in case of power failure. This unit has the capacity of 18 G.P.M. against a total dynamic head of 375 feet.

The new motor-driven hypo-chlorinator treats the water supply drawn from the creek with a dosage of 5 p.p.m. of calcium hypo-chloride solution, freeing the water from contamination.

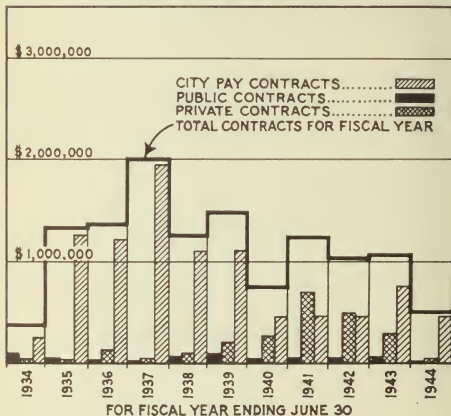
SEWAGE PUMPING STATIONMarina

Plans and specifications were prepared for a sound-proof office to be equipped with double glass visible windows, ventilation inlets and outlets, and the walls to be covered with acoustic celotex.

# WORK PERFORMED UNDER CONTRACT

|                        |    |               |         |                |
|------------------------|----|---------------|---------|----------------|
| Main Sewers            |    | \$            | 172,163 |                |
| Bridges                |    |               | 15,607  |                |
| Boulevards and Streets |    |               |         |                |
| Paid by City           | \$ | 258,488       |         |                |
| Public Assessment      |    | 1,007         |         |                |
| Private Contract       |    | <u>28,580</u> |         | <u>288,075</u> |
|                        | \$ |               |         | 475,845        |

## STREET WORK PERFORMED UNDER CONTRACT 1934 TO 1944 INCLUSIVE





STREET IMPROVEMENT ASSESSMENTS, ETC.ASSESSMENTS AND BONDS FOR STREET WORK

|                                                      |             |
|------------------------------------------------------|-------------|
| Assessments issued for cost of street work performed | 1           |
| Cost of street improvements covered by assessments   | \$3,963.03  |
| Bonds prepared (in triplicate)                       | 7           |
| Amount of assessments guaranteed by bonds            | \$2,108.96  |
| Average amount guaranteed by each bond               | 301.28      |
| Receipts for bond payments issued                    | 116         |
| Amount of bond payments collected                    | \$10,166.63 |

STREET WORK PROCEEDINGS

|                                                               |     |
|---------------------------------------------------------------|-----|
| Resolutions of Intention passed                               | 2   |
| Street improvements recommended under Resolution of Intention | 3   |
| Notices of Street Improvement posted                          | 501 |
| Notices of Resolution of Intention mailed                     | 342 |
| Ordinances ordering performance of street improvements passed | 4   |
| Proposals for street improvements published                   | 5   |
| Awards of Contract for street improvements published          | 2   |
| Notices of Recordation posted                                 | 12  |
| Notices of Recordation mailed                                 | 38  |
| Private contracts granted                                     | 14  |

NOTICES, PERMITS, AND INVESTIGATIONS

|                                          |       |
|------------------------------------------|-------|
| Notices to construct or repair sidewalks | 2,908 |
| Notices to construct bulkheads           | 27    |
| Notices to remove obstructions           | 387   |
| Notices to obtain curb lowering permits  | 92    |

NOTICES, PERMITS, AND INVESTIGATIONS - Continued

|                                                                                                                                                                                                      |       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| Notices to construct guard rails                                                                                                                                                                     | 5     |
| Notices to obtain oil tank permits                                                                                                                                                                   | 3     |
| Notices to reconstruct side sewer traps                                                                                                                                                              | -     |
| Notices to replace side sewer covers                                                                                                                                                                 | 66    |
| Notices to obtain street space permits                                                                                                                                                               | 238   |
| Street space permits reported on                                                                                                                                                                     | 506   |
| Oil tank permits reported on                                                                                                                                                                         | 25    |
| House moving permits reported on                                                                                                                                                                     | 14    |
| Miscellaneous calls and investigations                                                                                                                                                               | 2,134 |
| Blasting bonds set and jobs supervised                                                                                                                                                               | 7     |
| Curb lowering permits                                                                                                                                                                                | 144   |
| Notices to reconstruct area walls, set back side sewer traps and oil tanks and reconstruct sidewalk doors in connection with the widening of the roadways of streets by reducing the sidewalk widths | 26    |

PERMITS AND FEES FOR CORPORATION TRENCHES

|                                  | <u>Permits</u> | <u>Lin. Ft.</u> | <u>Fees</u> |
|----------------------------------|----------------|-----------------|-------------|
| Pacific Gas & Electric Company   | 1,570          | 21,006          | \$2,481.00  |
| San Francisco Water Department   | 3,197          | 8,204           | 4,870.50    |
| Pacific Tel. & Tel. Company      | 80             | 7,646           | 153.00      |
| Western Union                    | 2              | -               | 3.00        |
| Pacific Auxiliary Fire Alarm Co. | 1              | -               | 1.50        |

SPECIAL PERMITS

|                              | <u>Number</u> | <u>Fees</u> |
|------------------------------|---------------|-------------|
| Oil Tanks                    | 25            | 45.00       |
| Curb Lowering                | 244           | 1,998.00    |
| Street Space                 | 506           | 6,000.15    |
| House Moving                 | 15            | 30.00       |
| Sub-sidewalk                 | -             | -           |
| Oil Tank Permits Reported on | 42            | -           |

DIVISION OF SURVEYSSURVEYS PERFORMED

|                               |            |     |
|-------------------------------|------------|-----|
| Public contracts              | 4          |     |
| Private contracts             | 15         |     |
| Private contracts (Resurveys) | 7          |     |
| Municipal departments         | <u>163</u> |     |
| Total for Public Improvements |            | 189 |

LOT SURVEYS

|                       |          |          |
|-----------------------|----------|----------|
| Municipal Departments | <u>5</u> |          |
| Total Lot Surveys     |          | <u>5</u> |
| Total Surveys         |          | 194      |

Surveys covered approximately 1256 blocks and crossings with a total of 500,455 feet or 94.78 miles, distributed as follows: 13,390 feet of line and grade points for new street and sewer construction; 89,520 feet for various municipal work orders; 51,430 feet for subsidence surveys; 120,430 feet for monument lines; 18,500 feet for topographical surveys in Golden Gate Park and Buena Vista Park; 30,300 feet for topographical surveys at Log Cabin Ranch; 44,100 feet for surveys on Lake Merced Boulevard and Bayshore Freeway; 5,100 feet for Ocean Beach surveys; and 34,000 feet for sewer surveys.

In addition, a total of 17.5 miles of precise levels was run and 616 bench marks were set, checked, or reestablished; 151 monuments were set, checked, referenced, or recapped; there were resurveys of 4 blocks in which all improvements were located and which established the block boundaries in reference to the monument lines. Five parcels of land were surveyed for the Board of Education. Plans for postwar work required 63,540 feet of surveys for reduction of sidewalk widths on Duboce Avenue, Thirteenth

Street, Webster Street, Guerrero Street, California Street, Pacific Avenue, and Seventh Street

#### PRECISE LEVELS AND BENCH MARKS

| <u>District</u>     | <u>Bench Marks</u> | <u>Distance - Miles</u> |
|---------------------|--------------------|-------------------------|
| 100 Vara            | 144                | 4.9                     |
| Mission             | 182                | 5.1                     |
| Potrero             | 145                | 2.1                     |
| South San Francisco | 125                | 4.9                     |
| Others              | <u>20</u>          | <u>0.5</u>              |
| Total Bench )       |                    | Total                   |
| Marks Checked )     | 616                | Miles - 17.5            |
| and Reestablished)  |                    |                         |

#### MAPS APPROVED AND FILED

Masonic Ave. at Java Street and at Upper Terrace - widening  
 Hillside Lane, from Bernal Avenue to Calvert Drive  
 Third Street from Fourth Street to Custer Avenue - widening  
 Parkmerced Subdivision - record of survey map  
 Alemany Boulevard from Bayshore Blvd. to Junipero Serra Blvd.  
 Toland Street from Oakdale Avenue to Industrial Street

#### FEES RECEIVED FOR SURVEYS

##### 1943

|           |          |
|-----------|----------|
| July      | \$279.39 |
| August    | 100.00   |
| September | -        |
| October   | -        |
| November  | 55.00    |
| December  | 175.00   |

##### 1944

|          |               |
|----------|---------------|
| January  | -             |
| February | 285.00        |
| March    | 475.00        |
| April    | 273.36        |
| May      | 280.00        |
| June     | <u>340.00</u> |

\$2,262.75

OFFICE WORK

The office work performed by the Division of Surveys includes the following:

Data used by the surveyors in the field in connection with each survey were computed and assembled. From the surveyor's field notes, monument lines were adjusted and monument maps corrected. Maps were prepared of street widenings, openings, closings, extensions, etc., and filed in the office of the County Recorder. Copies of all recorded maps showing changes that affect assessment values were furnished the Assessor's office.

The sectional maps of the City and County, which total 354 sheets, and show all the official data for street name changes, street openings and closings, extensions, widenings, and all property acquired or sold by the City and County of San Francisco, were kept up to date.

A new City map now replaces the old one made in 1927. This map with its up to date delineation of public streets, subdivisions, housing project roads, and other improvements is used by City Departments and other agencies.

All appeals from the decisions of the City Planning Commission regarding building zone changes which were presented to the Board of Supervisors were checked to determine if signatures representing a sufficient area had been secured to enable the Board to act on the appeal.

All actions to quiet title to land that were referred to the City Attorney were checked by the Division of Surveys to determine if any City and County property was involved in any of these actions.

Other office work consisted of computing, writing, and checking all property descriptions for the Real Estate Department, investigating, and checking maps of proposed subdivisions

and checking street descriptions for dedication purposes.

Petitions were answered, estimates made, and information was furnished to various municipal departments, engineers and surveyors in private practice.

Information and assistance is constantly being given to many Federal agencies regarding warehouse and storage space, land for housing purposes and for trailer camps.

Much thought is being given by various municipal and governmental agencies to postwar planning and to the accumulation of a postwar work pile. Field surveys for some of these projects are being made, and to date the following have been completed:

Sunset Boulevard Extension in Golden Gate Park  
Bayshore Freeway  
Duboce Avenue, widening of the roadway  
Thirteenth Street  
Webster Street  
Guerrero Street  
California Street  
Pacific Avenue  
Seventh Avenue

# CURRENT CONTRACT DATA 1943-1944

Applying to City Pay Contracts and Major Contracts Involving City Funds

| Description                                                                                         | Contractor                 | Awarded  | Completed<br>Date | %   | Contract<br>Amount | Expended<br>to 6/30/44 | Fund                                     |
|-----------------------------------------------------------------------------------------------------|----------------------------|----------|-------------------|-----|--------------------|------------------------|------------------------------------------|
| <u>BOULEVARDS, PAVING, GRADING, ETC.</u>                                                            |                            |          |                   |     |                    |                        |                                          |
| Ashbury Street between<br>Frederick and Waller Sts.                                                 | M. J. Lynch                | 9/15/43  | 1/6/44            | 100 | \$ 23,684.62       | \$ 23,684.62           | General                                  |
| Guerrero St.-Fourteenth<br>St. to San Jose Ave. et al<br>Rail Salvage and Street<br>Pavement Repair | Eaton & Smith              | 1/5/44   | 6/30/44           | 70  | 113,225.24         | 79,000.00              | Special<br>Road<br>Improvement           |
| Jessie Street -<br>Seventh St. to<br>Westerly Termination                                           | E. J. Treacy               | 9/1/43   | 1/8/44            | 100 | 12,161.34          | 12,161.34              | General                                  |
| Market Street between<br>First and Tenth Sts.<br>Concrete Parking Lanes                             | Fay Improvement<br>Company | 6/9/43   | 2/9/44            | 100 | 56,302.81          | 56,302.81              | Special<br>Road<br>Improvement           |
| Monterey Boulevard bet-<br>ween Junipero Serra Blvd.<br>and Santa Clara Ave. -<br>Curbs             | Peter Sorensen             | 10/22/43 | 12/30/43          | 100 | 2,767.62           | 2,767.62               | Special<br>Road<br>Improvement           |
| Nineteenth Ave. (West<br>Side) South of Wawona<br>Street - Repairs                                  | Love & Haun                | 5/3/44   | 6/18/44           | 100 | 1,817.86           | 1,817.86               | Water<br>Revenue                         |
| Planing Bituminous<br>Pavement Surfaces, Major<br>Streets, Contract #6                              | Wells,<br>The Planer       | 10/29/43 | 3/20/44           | 100 | 23,363.00          | 23,363.00              | Spec. Gas Tax<br>Street Im-<br>provement |

## CURRENT CONTRACT DATA 1943-1944

Applying to City Pay Contracts and Major Contracts Involving City Funds

| Description                                                       | Contractor                  | Awarded | Completed Date | Contract Amount | Expended to 6/30/44 | Fund                     |
|-------------------------------------------------------------------|-----------------------------|---------|----------------|-----------------|---------------------|--------------------------|
| BOULEVARDS, PAVING, GRADING, ETC. - Continued                     |                             |         |                |                 |                     |                          |
| Planing Bituminous Pavement Surfaces Contract #7                  | Wells, The Planer           | 3/3/44  | 6/30/44        | 68 \$ 38,198.00 | \$ 25,800.00        | Special Road Improvement |
| SEWERS                                                            |                             |         |                |                 |                     |                          |
| Alta Street between Sansome and Montgomery Sts.-Sewer replacement | E. J. Treacy                | 6/4/43  | 7/16/43        | 100 1,900.00    | 1,900.00            | General                  |
| Bush St. from Franklin St. to Van Ness Ave. Sewer replacement     | M. J. Lynch                 | 6/2/44  | 6/30/44        | 100 5,922.20    | 5,922.20            | General                  |
| Fell St. from Webster St. to Laguna St. Sewer replacement         | R. Flatland                 | 6/25/43 | 11/15/43       | 100 17,431.88   | 17,431.88           | General                  |
| Hyde St. Storm Drain Outfall Extension                            | E. J. Treacy                | 5/5/43  | 8/24/43        | 100 3,650.00    | 3,650.00            | General                  |
| Ingleside Sewer - Section A                                       | Martin Murphy               | 8/4/43  | 2/22/44        | 100 112,271.68  | 112,271.68          | General                  |
| Langton St. between Harrison and Folsom Sts.                      | M. J. Lynch                 | 4/12/44 | 6/13/44        | 100 7,327.78    | 7,327.78            | General                  |
| Lombard St. between Franklin and Fillmore Sts. - Sewer repair     | Cement Gun Construction Co. | 8/27/43 | 11/23/43       | 100 14,588.89   | 14,588.89           | General                  |



CURRENT CONTRACT DATA 1943-1944

Applying to City Pay Contract and Major Contracts Involving City Funds

| Description                                                          | Contractor    | Awarded  | Completed<br>Date | Contract<br>Amount | Expended<br>to 6/30/44 | Fund                             |
|----------------------------------------------------------------------|---------------|----------|-------------------|--------------------|------------------------|----------------------------------|
| <u>SEWERS - Continued</u>                                            |               |          |                   |                    |                        |                                  |
| Parkmead - Test<br>Borings for Proposed<br>Sewer Tunnel              | E. J. Treacy  | 3/8/44   | 6/30/44 100       | \$ 1,582.71        | \$ 1,582.71            | General                          |
| Pine Lake Sewerage<br>District - Temporary<br>Sewage Pumping Station | R. Flatland   | 12/24/43 | 2/28/44 100       | 1,305.00           | 1,305.00               | General                          |
| Shotwell St. from<br>Seventeenth St. to<br>Eighteenth Street         | M. J. Lynch   | 6/11/43  | 8/26/43 100       | 6,182.89           | 6,182.89               | General                          |
| Twenty-fifth St. bet-<br>ween Pennsylvania Ave.<br>and Texas Street  | Eaton & Smith | 12/10/43 | 4/14/44 100       | 3,796.82           | 1,006.83*              | General,<br>Public<br>Assessment |

BRIDGES

|                                                                                    |                                   |        |             |           |           |                                          |
|------------------------------------------------------------------------------------|-----------------------------------|--------|-------------|-----------|-----------|------------------------------------------|
| Fourth St. Bridge over<br>Channel St. Waterway<br>Contract #3, New North<br>Fender | Healy-Tibbits<br>Construction Co. | 3/3/44 | 6/12/44 100 | 15,606.70 | 15,606.70 | Spec. Gas Tax<br>Street Im-<br>provement |
|------------------------------------------------------------------------------------|-----------------------------------|--------|-------------|-----------|-----------|------------------------------------------|

## CURRENT CONTRACT DATA 1943-1944

Applying to City Pay Contracts and Major Contracts Involving City Funds

| Description                                                                       | Contractor                     | Awarded  | Completed<br>Date | Contract<br>Amount | Expended<br>to 6/30/44 | Fund                                     |
|-----------------------------------------------------------------------------------|--------------------------------|----------|-------------------|--------------------|------------------------|------------------------------------------|
| <u>MISCELLANEOUS</u>                                                              |                                |          |                   |                    |                        |                                          |
| Bernal Avenue Slope<br>Repair, East Side                                          | Peter Sorensen                 | 10/29/43 | 3/27/44           | 11,071.50          | 11,071.50              | Spec. Gas Tax<br>Street Im-<br>provement |
| Forty-second Avenue<br>between Noriega and<br>Ortega Streets -<br>Sand Removal    | Piombo<br>Bros. & Co.          | 1/14/44  | 2/17/44           | 2,290.00           | 2,290.00               | Special<br>Road<br>Improvement           |
| Log Cabin Ranch<br>San Mateo County -<br>Water Supply                             | Walter Lenkeit                 | 5/29/42  | 6/23/43           | 10,968.33          | 10,968.33              | General                                  |
| Thirty-second Avenue<br>between Pacheco and<br>Quintara Streets -<br>Sand Removal | Henry Doelger<br>Builder, Inc. | 10/15/43 | 12/8/43           | 1,125.00           | 1,125.00               | Special<br>Road<br>Improvement           |

\* Amount paid by City - Balance paid by property owners.

INFORMAL CONTRACTSCOMPLETED DURING FISCAL YEAR 1943-1944

| <u>Location</u>                                                                        | <u>Type of Work</u>                           | <u>Amount</u> | <u>Fund</u>                            |
|----------------------------------------------------------------------------------------|-----------------------------------------------|---------------|----------------------------------------|
| Alemaný Boulevard<br>from Davenport Lane<br>to a point 146' east<br>of Trumbull Street | Concrete curb                                 | \$ 647        | Special<br>Road<br>Improvement         |
| Alemaný Boulevard and<br>Onondago Avenue                                               | Traffic<br>Islands                            | 802           | State High-<br>way Trust               |
| Dolores Street and<br>Randall Street                                                   | Guard Rail                                    | 134           | Special<br>Road<br>Improvement         |
| Great Highway Beach<br>Protection near<br>Taraval Street                               | Gunité Sheet<br>Piling                        | 517           | Special<br>Road<br>Improvement         |
| Great Highway Beach<br>Protection south of<br>Pacheco Street                           | Hauling concrete<br>Foundation and<br>Copings | 299           | Special<br>Road<br>Improvement         |
| Great Highway Beach<br>Protection south of<br>Pacheco Street                           | Hauling stone<br>for emergency<br>repairs     | 3,817         | Special<br>Road<br>Improvement         |
| Islais Creek Bridge                                                                    | Electrically<br>operated<br>traffic gate      | 925           | Spec. Gas Tax<br>Street<br>Improvement |
| Junipero Serra<br>Boulevard opposite<br>Estero Way                                     | Concrete<br>Stairways                         | 296           | Special<br>Road<br>Improvement         |
| Market Street and<br>Glendale Street                                                   | Backfilling<br>Test Pits                      | 879           | Spec. Gas Tax<br>Street<br>Improvement |

DIVISION OF DESIGN

This division investigates and prepares reports on all proposed major projects, including preliminary designs and estimates of cost. When a decision has been reached to proceed with a project, for which money is available, this division prepares all plans and specifications for construction contracts.

Studies and investigations on some projects continue over several years, because the necessary funds for construction are not available, or because other projects of greater importance take precedence.

The work done by this division is divided into two groups. One group includes those projects which were complete. The other group includes projects on which work was done but completion of which will be deferred until a later date. It will be noted that the report of this division refers to investigations, studies, plans and specifications only, and not to construction.

# D I V I S I O N   O F   D E S I G N

(These items refer to plans and specifications and not to actual construction)

| <u>Major Divisions</u>                                   | <u>A P P R O X I M A T E   C O S T</u>           |                                                   |                                       |
|----------------------------------------------------------|--------------------------------------------------|---------------------------------------------------|---------------------------------------|
|                                                          | <u>Plans and<br/>Specifications<br/>Complete</u> | <u>Plans and<br/>Specifications<br/>Under Way</u> | <u>Plans and<br/>Surveys<br/>Only</u> |
| Bridges - 2nd 1/4¢ gas tax, Major Streets                | \$ 15,808                                        |                                                   |                                       |
| Miscellaneous Plans, excluding traffic<br>(County Roads) |                                                  |                                                   | \$ 10,009                             |
| 1/4¢ Gas Tax - State Highways                            |                                                  | \$ 51,577,000                                     | 33,581                                |
| 1/4¢ Gas Tax - Major Streets                             | 73,509                                           | 8,663,100                                         | 97,000                                |
| Sewers, Extensions, and Pumping Stations<br>(Tax Rate)   | -                                                | -                                                 | -                                     |
| Special Improvements                                     |                                                  |                                                   | 8,549                                 |
| Tax Rate Plans                                           |                                                  |                                                   | 38,787                                |
| Traffic Engineering Section                              |                                                  |                                                   | <u>25,749</u>                         |
|                                                          | <u>\$ 89,317</u>                                 | <u>\$ 60,240,100</u>                              | <u>\$ 213,675</u>                     |

DIVISION OF DESIGN

These items refer to plans and specifications and not to actual construction.

| <u>STATE HIGHWAYS (One-Quarter<br/>Cent Gasoline Tax)</u>                                 | <u>Contract Plans</u> |                  | <u>Lands</u>       |
|-------------------------------------------------------------------------------------------|-----------------------|------------------|--------------------|
|                                                                                           | <u>Complete</u>       | <u>Under Way</u> | <u>(Estimated)</u> |
| Lombard St. Signal System                                                                 | \$                    | \$ 23,000        | \$                 |
| Bay Shore Boulevard and<br>Potrero Ave., channelization<br>(Replaced by Bayshore Freeway) |                       |                  |                    |
| Mission Street Viaduct                                                                    |                       | 280,000          |                    |
| Alemaný Boulevard at<br>St. Mary's Park - Overpass                                        |                       | 27,000           |                    |
| Alemaný Boulevard, San Jose<br>Ave. to Mission Street<br>Channelization                   |                       | 40,000           |                    |
| Junipero Serra Boulevard at<br>Stanley Drive - Underpass                                  |                       | 207,000          |                    |
| Bay Shore Boulevard,<br>Van Ness Ave., Lombard St.<br>(Bayshore Freeway)                  |                       | 51,000,000       |                    |
| Traffic Striping, Route #56                                                               |                       |                  |                    |
| Traffic Striping, Route #68                                                               |                       |                  |                    |
| <br><u>MAJOR STREETS (One-Quarter<br/>Cent Gasoline Tax)</u>                              |                       |                  |                    |
| Market Street and<br>Portola Drive                                                        | 30,000                | 3,808,000        | 1,743,000          |
| Army Street Widening                                                                      | 30,398                | 230,800          | 513,000            |
| Clipper Street Extension                                                                  |                       | 210,000          | 20,000             |
| Sixth St., Brannan St.<br>to Third Street                                                 |                       | 3,156,000        | 1,100,000          |
| Thirteenth St., Mission St.<br>to Bryant Street                                           |                       |                  | 4,536,500          |
| San Jose Ave., Army St.<br>to Brook Street                                                |                       | 129,000          | 450,000            |
| Stanley Drive, Alemaný Blvd.<br>to Junipero Serra Blvd.                                   |                       | 190,000          |                    |
| Stanley Drive - Underpass                                                                 | 611                   | 192,000          |                    |
| Webster Street Extension                                                                  |                       | 24,000           | 50,000             |

| <u>MAJOR STREETS - Cont'd</u>                                                                          | <u>Contract Plans</u> |                                         | <u>Lands</u>       |
|--------------------------------------------------------------------------------------------------------|-----------------------|-----------------------------------------|--------------------|
|                                                                                                        | <u>Complete</u>       | <u>Under Way</u>                        | <u>(Estimated)</u> |
| Monterey Boulevard, Ridge-<br>wood Avenue to San Anselmo Ave.                                          | \$                    | \$210,000                               | \$                 |
| Trumbull Street, Mission<br>Street to Alemany Boulevard                                                |                       | 62,400                                  | 65,000             |
| Persia Avenue Extension                                                                                |                       | 13,700                                  | 43,000             |
| Sunset Boulevard Extension<br>(Golden Gate Park)                                                       |                       | 300,000                                 |                    |
| Geneva Avenue Extension                                                                                |                       | 37,000                                  | 62,000             |
| Nineteenth Avenue -<br>Signal System                                                                   |                       | 33,000                                  |                    |
| Junipero Serra Boulevard,<br>Ocean Avenue to<br>Nineteenth Avenue                                      |                       | 31,200                                  |                    |
| Channelization for<br>Traffic and Safety                                                               |                       |                                         |                    |
| Alemany Boulevard, San Jose<br>Ave. to Junipero Serra Blvd.                                            |                       | 36,000                                  | 450                |
| Fourth St. Bridge - Fenders                                                                            | 15,808                |                                         |                    |
| Bernal Avenue, East side                                                                               | 12,500                |                                         |                    |
| <u>SPECIAL ROAD IMPROVEMENT FUND</u><br><u>(County Roads)</u>                                          |                       | <u>Plans and</u><br><u>Surveys Only</u> |                    |
| Special Improvements<br>(Engineering studies for which no<br>special appropriations had been made)     |                       | \$ 8,549                                |                    |
| Traffic - Division of Design                                                                           |                       | 13,039                                  |                    |
| Street Signs - new and repair                                                                          |                       | 397                                     |                    |
| Traffic Striping                                                                                       |                       | 376                                     |                    |
| Traffic - Maintenance Control Devices                                                                  |                       | 154                                     |                    |
| Traffic - Directional Signs                                                                            |                       | 246                                     |                    |
| Traffic School Pedestrian Lanes                                                                        |                       | 728                                     |                    |
| Bernal Avenue - west side                                                                              |                       | 1,338                                   |                    |
| Broadway Tunnel                                                                                        |                       | 122                                     |                    |
| <u>SEWERS, RICHMOND-SUNSET SEWAGE</u><br><u>TREATMENT PLANT, AND SEWAGE</u><br><u>PUMPING STATIONS</u> |                       |                                         |                    |
| Miscellaneous Sewer Extensions                                                                         |                       | 2,397                                   |                    |
| Richmond-Sunset Treatment Plant                                                                        |                       | 1,901                                   |                    |
| Sewage Pumping Stations                                                                                |                       | 800                                     |                    |
| Storm and Sanitary Sewers                                                                              |                       | 21,178                                  |                    |
| Sewage Disposal Studies                                                                                |                       | 12,511                                  |                    |

POST-WAR PROGRAM

During the past year considerable work has been accomplished on post-war highway planning. The following tabulations give the status of plans to date:

Highway Plans - 100% Completed

|                                                          |                   |
|----------------------------------------------------------|-------------------|
| Third Street, Custer Avenue to Bayshore Boulevard        | \$ 129,000        |
| Evans Avenue Bridge                                      | 92,000            |
| Geneva Avenue Extension                                  | 88,000            |
| Alemaný Boulevard                                        | 103,000           |
| Webster Street Extension, Duboce Avenue to Market Street | 90,000            |
| Fourth Street Bridge - New fender system                 | 25,000            |
| Persia Avenue, Mission Street to Ocean Avenue            | 70,000            |
| Nineteenth Avenue Boulevard - Signal system              | 51,000            |
| Lombard Street - Signal System                           | 23,000            |
|                                                          | <u>\$ 671,000</u> |

Highway Plans - 75% Completed

|                                                                    |                    |
|--------------------------------------------------------------------|--------------------|
| Army Street Widening, Harrison Street to Guerrero St.              | \$ 702,000         |
| Clipper Street, Douglass Street to Portola Drive                   | 200,000            |
| Anza Street, Parker Avenue to Masonic Avenue                       | 184,000            |
| Stanley Drive Underpass                                            | 222,000            |
| Mission Street Viaduct - Reconstruction                            | 300,000            |
| Junipero Serra Blvd., Ocean Avenue to County Line - Channelization | 130,000            |
| Webster Street Sidewalk Narrowing - Duboce Avenue to Broadway      | 189,000            |
|                                                                    | <u>\$1,927,000</u> |

Highway Plans - Under Way  
To be completed in the fiscal year 1944-1945

|                                                                               |                    |
|-------------------------------------------------------------------------------|--------------------|
| San Jose Avenue and Guerrero Street - Army Street to Randall Street           | \$ 809,000         |
| Guerrero Street, Army Street to Market Street                                 | 330,000            |
| Portola Drive, Section 1 - Sloat Boulevard to San Lorenzo Avenue              | 1,320,000          |
| Christmas Tree Point                                                          | 100,000            |
| Stanley Drive, Alemaný Boulevard to Junipero Serra Boulevard                  | 190,000            |
| Alemaný Boulevard Channelization - Mission Street to Junipero Serra Boulevard | 240,000            |
| Trumbull Street, Mission Street to Alemaný Boulevard                          | 170,000            |
| Great Highway Protection                                                      | 90,000             |
| Market Street, Portola Drive, Section 2 - San Lorenzo Avenue to Evelyn Way    | 840,000            |
| Seventh Street Sidewalk Narrowing - Market Street to Townsend Street          | 106,000            |
|                                                                               | <u>\$4,195,000</u> |



Highway Plans and Investigation Work  
In Preliminary Stage

|                                                                      |                  |
|----------------------------------------------------------------------|------------------|
| Islais Creek Bridge                                                  | \$1,250,000      |
| Second Street - Sidewalk Narrowing, Market Street to Harrison Street | 67,000           |
| Mission Street Reconstruction                                        | 814,000          |
| Monterey Boulevard                                                   | 170,000          |
| Broadway Tunnel                                                      | 3,200,000        |
| Sixth Street Viaduct                                                 | 5,100,000        |
| Thirteenth Street, Waller Street Improvement                         | 5,200,000        |
| Three Projects - Portola Drive, Market Street, Evelyn Way, easterly  | <u>3,340,000</u> |
|                                                                      | \$19,141,000     |

The total expenditures for the long range postwar program for highway projects will be \$25,934,000.

Sewer Projects - Plans Completed

|                                                  |                |
|--------------------------------------------------|----------------|
| Ingleside, Section "B"                           | \$ 156,000     |
| Locust Street, Jackson Street to Presidio Avenue | 24,000         |
| Laguna Street - Diversion structure              | 30,000         |
| Baker Street - Outfall                           | 100,000        |
| Scott Street, Section "A"                        | 150,000        |
| Scott Street, Section "B"                        | 260,000        |
| Lincoln Way - Outfall                            | 200,000        |
| Upper Army Street, Section "A"                   | <u>100,000</u> |
|                                                  | \$1,020,000    |

Sewer Plans - 75% Completed

|                                            |                |
|--------------------------------------------|----------------|
| Scott Street, Sections "C", "D", and "E"   | \$ 790,000     |
| Lower Islais Creek                         | 285,000        |
| Eighteenth Street Sewerage District        | 700,000        |
| Potrero Street, 25th Street to Army Street | 35,000         |
| Lower Army Street                          | 125,000        |
| Upper Army Street, Section "B"             | 100,000        |
| Vicente Street Outfall, Section "B"        | 300,000        |
| Ingleside Sewer, Section "C" and "D"       | <u>275,000</u> |
|                                            | \$2,610,000    |

Sewer Plans - In Preliminary Stages

|                                                   |                |
|---------------------------------------------------|----------------|
| Lake Street Enlargement, Sections "A" and "B"     | \$ 550,000     |
| Lake Street, Sections "C" and "D"                 | 750,000        |
| Lake Merced, Sections "A", "B", "C", "D", and "E" | 3,500,000      |
| Upper Army, Sections "C" and "D"                  | 600,000        |
| Napoleon Street                                   | <u>154,000</u> |
|                                                   | \$5,554,000    |

The total expenditures for the long-range post-war program for sewer projects will be \$9,184,000.

The grand total for the entire long-range post-war program amounts to \$35,118,000.

## WILLIAM H. OHMEN

William H. Ohmen, affectionately known as "Henry," an honored member of the City Engineer's staff for over 31 years, retired voluntarily on October 1, 1943. He was appointed as an engineering draftsman in 1912, and later became Chief Civil Engineering Designer in full charge of the Division of Design, with its important duties and diversified assignments covering a broad field of engineering, all of which he valiantly undertook and carried to successful completion.

He set up very high standards for himself and his associates, but under his enthusiastic guidance the goals were always achieved. He received outstanding cooperation, the pleasure of being a cog in the tremendous organization which he helped to establish with his great creative ability being sufficient reward for those who worked under him. His keen mind never faltered and every problem presented to him was definitely solved. His main objective always was to raise the efficiency of the Bureau of Engineering higher and to strive for the betterment of his subordinates, all of which he accomplished with that intensity of purpose for which he was noted.

CENTRAL PERMIT BUREAU

S. J. Rosenblum, Head Clerk

The Central Permit Bureau was established in the Department of Public Works on January 8, 1932, concurrent with the adoption of the new City Charter. This Bureau was created to make it possible to clear all applications and obtain permits at one place, and this system has proved to have marked advantages over the former method of decentralized permit issuance.

It is the function of this Bureau to accept applications, expedite their approval or disapproval, issue permits, and collect the proper legal fees. Also, it is the duty of the Bureau, upon receipt of Certificates of Final Inspection from the various interested departments, to issue Certificates of Occupancy for all buildings except new one- and two-family frame dwellings.

The supervisory head of the Central Permit Bureau is also cashier for the Department of Public Works; he collects all monies due the Department and deposits same daily with the Treasurer of the City and County in compliance with Sec. 82 of the Charter.

Number of  
Permits issued

|                                   |       |
|-----------------------------------|-------|
| Buildings                         | 3,585 |
| Billboards                        | 184   |
| Boiler Installations              | 129   |
| Boiler Inspections                | 3     |
| House Moving                      | 15    |
| Demolitions                       | 29    |
| Flue Registrations                | 20    |
| Flue Permits - New Buildings      | 4     |
| Flue Permits - Old Buildings      | 61    |
| Flue Coupon Books - New Buildings | 61    |
| Flue Coupon Books - Old Buildings | 25    |
| Construct Sidewalks               | 32    |
| Street Space                      | 472   |
| Excavations                       | 245   |
| Side Sewers                       | 510   |
| Excess Costs - Side Sewers        | 20    |
| Sidewalk Flower Markets           | 56    |
| Blasting                          | 2     |

|                                       | Number of<br>Permits issued (Con'd) |
|---------------------------------------|-------------------------------------|
| Advertising                           | 1                                   |
| House Number Certificates             | 470                                 |
| Payments for Surveys                  | 15                                  |
| Payments for Engineering Inspection   | 37                                  |
| Payments for Street Improvement Bonds | 116                                 |
| Public Utilities Street Openings      | <u>4,850</u>                        |
| Total number of permits issued        | 10,942                              |

#### REFUNDS MADE FROM SPECIAL AND TRUST FUNDS

|                                                         | Number of<br>Refunds | Amount<br>Refunded |
|---------------------------------------------------------|----------------------|--------------------|
| Special Permit Fund<br>(Street Space and Sub-sidewalks) | 302                  | \$15,690.00        |
| House Moving Fund                                       | 19                   | 1,900.00           |
| Excavations                                             | 44                   | 272.00             |
| Side Sewers                                             | 428                  |                    |
| Refunds to Depositors                                   |                      | 17,408.20          |
| Installation costs credited to<br>General Fund          |                      | 54,523.80          |
| Deposits on Plans                                       | 610                  | 4,015.00           |
| Street Improvement Bonds                                | 8                    | 382.84             |
|                                                         | <u>1411</u>          | <u>\$94,191.84</u> |

#### REPORT OF HOUSE NUMBERING ACTIVITIES

|                                                                                           |              |        |
|-------------------------------------------------------------------------------------------|--------------|--------|
| House Numbers Issued                                                                      |              |        |
| Private Construction                                                                      | 1,566        |        |
| Metropolitan Park Merced Project                                                          | 2,531        |        |
| San Francisco Housing Authority Projects                                                  | <u>7,526</u> | 11,623 |
| Investigations made and complaints adjusted                                               |              | 450    |
| Changes in House Numbering ordered                                                        |              | 52     |
| Office Inquiries from Banks, Title Insurance<br>Companies, General Public, etc., answered |              | 1,500  |

#### ADDITIONAL NON-REVENUE ACTIVITIES

|                                                                                                                                                             |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| Office and Telephone Inquiries pertaining to<br>age and class of buildings, and other in-<br>formation requiring reference to old ap-<br>plications on file | 4,000 |
| Plans brought from the basement by request<br>for reference purposes and photostating                                                                       | 364   |

CASHIER'S REPORTSOURCE OF RECEIPTS

|                                       |              |
|---------------------------------------|--------------|
| Street Space Permit Deposits          | \$ 22,460.00 |
| Sub-sidewalk Permit Deposits          | -            |
| House Moving Permit Deposits          | 1,500.00     |
| Side Sewer Permits Deposits           | 84,434.00    |
| Deposits on Plans (Appro. 340,999.00) | 3,985.00     |

EXCAVATION PERMITS

|                                        |                 |
|----------------------------------------|-----------------|
| Special Deposits                       | \$ 427.70       |
| Insp. Fees for Excav. (Spec. Deposits) | 45.00           |
| " " (Public Utility Corporations)      | 7,198.50        |
| " " (Lowering Curbs, etc.)             | <u>1,998.00</u> |
|                                        | 9,669.20        |

|                               |               |
|-------------------------------|---------------|
| Fees for Building Permits     | 48,764.20     |
| " " Billboard Permits         | 368.00        |
| " " Boiler Installations      | 502.50        |
| " " Boiler Inspections        | 16.00         |
| " " Use of Street Space       | 6,000.15      |
| " " House Number Certificates | 3,204.00      |
| " " House Moving Permits      | 30.00         |
| " " Flue Registrations        | 400.00        |
| " " Flues - New Buildings     | 20.00         |
| " " " Old Buildings           | 122.00        |
| " " " New Buildings (Coupons) | 750.00        |
| " " " Old Buildings (Coupons) | <u>500.00</u> |
|                               | 60,676.85     |

|                                      |           |
|--------------------------------------|-----------|
| Fees - Sidewalk Flower Markets       | 1,440.00  |
| Side Sewers - Excess costs           | 612.32    |
| Advertising Charges                  | 73.50     |
| Payments on Street Improvement Bonds | 10,166.63 |
| Fees for Surveys                     | 2,262.75  |
| Fees for Inspections                 | 9,385.00  |

MISCELLANEOUS509,049.54

Total Receipts - \$715,714.79

Note: 29 Demolition Permits)  
           32 Sidewalk Permits)

} Issued - No fees charged

DEPOSITS WITH CITY AND COUNTY TREASURER  
CLASSIFIED BY FUNDS

NATURE OF DEPOSITS

|                                       |                 |             |
|---------------------------------------|-----------------|-------------|
| Special Permit Fund                   |                 | \$22,460.00 |
| House Moving Fund                     |                 | 1,500.00    |
| Side Sewer Deposits (General Fund)    |                 | 84,434.00   |
| Deposits on Plans (Appro. 340,999.00) |                 | 3,985.00    |
| General Fund (Surveys)                | \$ 2,262.75     |             |
| General Fund (Inspections)            | <u>2,385.00</u> | 11,647.75   |

EXCAVATIONS

|                            |                 |           |
|----------------------------|-----------------|-----------|
| Deposits (Excavation Fund) | 427.70          |           |
| Fees (General Fund)        | <u>2,241.50</u> | 9,669.20  |
| Advertising (General Fund) |                 | 73.50     |
| Street Improvement Fund    |                 | 10,166.63 |

SIDE SEWERS (General Fund)

|              |  |        |
|--------------|--|--------|
| Excess Costs |  | 612.32 |
|--------------|--|--------|

GENERAL FUND

|                                |               |           |
|--------------------------------|---------------|-----------|
| Fees Building Permits          | 48,764.20     |           |
| " Billboards                   | 368.00        |           |
| " Street Space                 | 6,000.15      |           |
| " House Numbers                | 3,204.00      |           |
| " House Moving                 | 30.00         |           |
| " Boiler Installations         | 502.50        |           |
| " Boiler Inspections           | 16.00         |           |
| " Flue Registrations           | 400.00        |           |
| " Flues - New Buildings        | 20.00         |           |
| " " - Old Buildings            | 122.00        |           |
| " " - New Buildings (Coupons)  | 750.00        |           |
| " " - Old Buildings (Coupons)  | <u>500.00</u> | 60,676.85 |
| Fees - Sidewalk Flower Markets |               | 1,440.00  |

MISCELLANEOUS

|                                           |              |            |
|-------------------------------------------|--------------|------------|
| State Highway Trust Fund                  | 26,217.91    |            |
| Special Road Improvement Fund             | 86,910.10    |            |
| General Fund                              | 529.96       |            |
| Special Gas Tax Street Improvement Fund   | 395,349.50   |            |
| General Fund Unappropriated (Appro. 2990) | <u>42.07</u> | 509,049.54 |

Total Deposits with City & County Treasurer    \$715,714.79

TOTAL NUMBER OF BUILDING APPLICATIONS RECEIVED - 4150

CLASSIFICATION OF BUILDING PERMITS ISSUED

|                  | <u>No. of<br/>Permits</u> | <u>Estimated<br/>Cost</u> | <u>Fees</u> |
|------------------|---------------------------|---------------------------|-------------|
| A                | -                         | \$ -                      | -           |
| B                | -                         | -                         | -           |
| C                | 6                         | 115,700                   |             |
| Frames           | 1,512                     | 4,982,960                 |             |
| Alterations      | 2,251                     | 4,301,169                 |             |
| Public           | -                         | -                         |             |
| U. S. Government | -                         | 2,722,000                 |             |
| Total            | - 3,769                   | \$12,121,829              | \$49,132.20 |

FLUE REGISTRATIONS AND PERMITS

|                               |       |           |
|-------------------------------|-------|-----------|
| Flue Registrations            | 20    | \$ 400.00 |
| *Coupon Books - New Buildings | 61    | 750.00    |
| ** " " Old "                  | 25    | 500.00    |
| Flue Permits - New "          | 4     | 20.00     |
| " " Old "                     | 61    | 122.00    |
| Total                         | - 171 | 1,792.00  |

MISCELLANEOUS PERMITS

|                       |       |        |
|-----------------------|-------|--------|
| To Raze Structures    | 29    | -      |
| To Move Buildings     | 15    | 30.00  |
| Boiler Installations  | 129   | 502.50 |
| Boiler Insp. Requests | 3     | 16.00  |
| Total                 | - 176 | 548.50 |

|              |       |              |             |
|--------------|-------|--------------|-------------|
| GRAND TOTALS | 4,116 | \$12,121,829 | \$51,472.70 |
|--------------|-------|--------------|-------------|

\*New Coupon Books contain  
25 prepaid coupons

\*\*Old Coupon Books contain  
10 Prepaid coupons

BUREAU OF BUILDING INSPECTION

John C. Little, Superintendent

The Bureau examines and reports on all plans and applications for building permits issued by the Department of Public Works, inspects the building work as it progresses, makes a final inspection, and issues Certificates of Final Completion.

At the present time the personnel employed in the Bureau is as follows:

|          |                     |
|----------|---------------------|
| 1        | Superintendent      |
| 10       | Building inspectors |
| 1        | Boiler inspector    |
| 1        | Structural engineer |
| <u>2</u> | Clerk-stenographers |
| 15       |                     |

One building inspector is in charge of general plan checking, assignment of duties, and public relations. The structural engineer checks all stresses and designs pertaining to structural engineering. One building inspector directs the field and office work of all building inspectors. Eight building inspectors work in their respective districts.

The structural engineer assisted Army, Navy, and Marine Corps in selecting buildings suitable for warehousing and other purposes, and also checked building plans prepared by the various branches of the Federal Government. During the year other municipal departments were given advice concerning matters relative to structural design and safety.

Buildings are divided into the following classifications:

|                  |                                                                                                                   |
|------------------|-------------------------------------------------------------------------------------------------------------------|
| Class A building | - Steel frame, fire-proof building                                                                                |
| Class B building | - Reinforced concrete, fire-proof building                                                                        |
| Class C building | - Brick or concrete buildings with wood floor joists and wood studs, and other combustible interior construction. |
| Frame building   | - Building, exterior walls and interior construction of which are wood.                                           |

There is another classification of mill construction, which is seldom used, where exterior walls are of masonry and the interior construction is of heavy timbers with no concealed air spaces.



Within the boundary known as the "fire limits" in the downtown and near downtown districts, all new buildings must be of Class A, B, or C. Frame building construction is permitted outside of the fire limits only.

During the fiscal year 1943-44, building permits have been issued for work in the various classifications above enumerated and in other categories with the estimated cost as follows:

| <u>Class</u>       | <u>Number<br/>of Permits</u> | <u>Cost</u>      |
|--------------------|------------------------------|------------------|
| A                  | -                            | -                |
| B                  | -                            | -                |
| C                  | 6                            | \$ 115,700       |
| Frame construction | 1512                         | 4,982,960        |
| Alterations        | 1048                         | 4,301,169        |
| U. S. Government   | -                            | <u>2,722,000</u> |
|                    | Total                        | \$12,121,829     |

The largest projects during the year have been construction of 3,769 United States government temporary housing units for war workers.



PARKMERCED HOUSING PROJECT  
Completed Unit

Private residential construction, except for the Metropolitan Parkmerced Project, was limited to homes built under Title VI of the Federal Housing Act. A large number of the 2000 houses allotted to this City have been completed and were constructed under special priority provisions for rental or sale to war workers only.

The Metropolitan Parkmerced Housing Project, consisting of about 47 City blocks, has been under construction during the past year and is now nearing completion.

On account of the housing shortage, only the families of Army and Navy officers permanently stationed in the San Francisco area are permitted to occupy these homes. Permits for the project were issued in a previous fiscal year.

Emergency building ordinances were adopted to conform to the restrictions and priorities on building materials as established by the War Production Board. The Board of Supervisors by resolution established a procedure for checking of plans and inspection of building construction during the war emergency.

During the year the Superintendent of the Bureau attended many meetings of the Pacific Coast Building Officials Conference and took an active part in these meetings. The present Building Code, originally enacted in 1906, has now become in some respects obsolete. Although frequently amended, it is now in need of a complete revision.

The following progress reports cover the activities of the Bureau for the fiscal year:

|                                                                                                                                 |        |
|---------------------------------------------------------------------------------------------------------------------------------|--------|
| Number of inspections reported by inspectors of buildings                                                                       | 24,850 |
| Number of projects remaining on which permits have been issued that have not been reported completed by inspectors of buildings | 2,033  |
| Number of complaints that have been reported adjusted by inspectors of buildings                                                | 231    |

|                                                                                                                               |       |
|-------------------------------------------------------------------------------------------------------------------------------|-------|
| Number of inspections reported by inspectors of boilers                                                                       | 563   |
| Number of projects remaining on which permits have been issued that have not been reported completed by inspectors of boilers | 2     |
| Number of complaints and requests for information recorded                                                                    | 157   |
| Number of complaints and requests on which initial inspections have been reported                                             | 75    |
| Number of applications for permits examined and approved by structural engineers                                              | 2,566 |
| Number of applications for permits pending                                                                                    | 120   |



PARKMERCED HOUSING PROJECT  
Typical patio

BUREAU OF ARCHITECTURE

Dodge A. Riedy, City Architect

The Bureau prepares preliminary designs, plans, specifications, and construction cost estimates for all municipal buildings and other structures for the City and County. The City Architect approves all materials entering into the construction of new buildings, and he supervises the work until completed and accepted by the City.

Under the supervision of the City Architect, plans and specifications for buildings and structures of major proportions are prepared by a private architect who is appointed by the Director of Public Works. The City Architect prepares final specifications that include special provisions to conform with City practice.

During the past year the work in this Bureau consisted mostly of minor alterations, repairs, maintenance work, interior and exterior painting of school buildings, as well as the following construction: Civilian Defense projects, demountable dormitories for service men, a control center for the Civilian War Council. The tabulations given below show type of work and cost of each contract.

## BOARD OF EDUCATION

|                                            |             |
|--------------------------------------------|-------------|
| Abraham Lincoln High School                |             |
| 6 Frame class rooms, including yard paving | \$19,805.15 |
| Alterations to the Sarah B. Cooper School  |             |
| Child center                               | 3,583.37    |
| Hawthorne School                           |             |
| Alterations to lunch room                  | 5,709.00    |
| Lawton School                              |             |
| Temporary class room partitions            | 3,531.00    |
| Raphael Weill School                       |             |
| Temporary class room partitions            | 3,216.00    |
| John Swett Junior High School              |             |
| Shower and dry room                        | 4,816.16    |

|                                                                               |             |
|-------------------------------------------------------------------------------|-------------|
| Polytechnic High School                                                       |             |
| New skylights on academic building                                            | \$ 6,783.73 |
| Polytechnic High School                                                       |             |
| Replacing student tables and flooring<br>in chemistry laboratory              | 2,530.13    |
| Polytechnic High School                                                       |             |
| Miscellaneous repairs to the wrought<br>iron fencing and gates                | 540.00      |
| Polytechnic High School                                                       |             |
| Repair to steel stairs in the yard                                            | 2,090.00    |
| Lowell High School                                                            |             |
| Repair to steel stairs in the yard                                            | 1,890.00    |
| Francisco Junior High School                                                  |             |
| New composition roof                                                          | 4,140.00    |
| High School of Commerce                                                       |             |
| Repairs to the roof                                                           | 10,159.00   |
| Edward Robeson Taylor School                                                  |             |
| Repair of the composition roof                                                | 2,799.00    |
| Alta Vista School                                                             |             |
| South wall water-proofed and a<br>new roof installed                          | 8,846.31    |
| Alta Vista School                                                             |             |
| Repairs to the iron fence                                                     | 446.00      |
| Lincoln School                                                                |             |
| Repair of fire damage                                                         | 8,400.00    |
| Abraham Lincoln High School                                                   |             |
| Re-conditioning of exterior doors                                             | 3,082.00    |
| Bret Harte School site                                                        |             |
| Moving, underpinning and re-condition-<br>ing 2 portable frame class rooms    | 3,950.00    |
| West Portal School                                                            |             |
| Underpinning certain columns on which<br>settlement occurred                  | 880.00      |
| Guadalupe School                                                              |             |
| Repairs to pipe hand rails                                                    | 952.00      |
| Steam boilers repaired and new tubes in-<br>stalled at the following schools: |             |
| Guadalupe                                                                     |             |
| Parkside                                                                      |             |
| Pacific Heights                                                               |             |
| Yerba Buena                                                                   | 4,084.75    |
| Grattan School                                                                |             |
| Construction of a wooden fence                                                | 1,412.95    |
| George Washington High School                                                 |             |
| Completion of sculptured frieze                                               | 3,261.00    |

George Washington High School  
Repair of frescoes

\$ 250.00

Sunnyside School

Repairing plastering at main entrance 360.00

Blackboards

Replacement and repairs of blackboards,  
bulletin boards, and pinning spaces for  
the following schools:

Raphael Weill  
Jefferson  
Sunnyside  
Alamo

29,000.00

Total \$136,517.55

Painting work - exterior

|                                                       |             |
|-------------------------------------------------------|-------------|
| Alamo School                                          | \$ 2,300.00 |
| Alta Vista School                                     | 1,422.00    |
| Alvarado School                                       | 3,621.00    |
| Andrew Jackson School                                 | 3,306.00    |
| Edison School                                         | 4,421.00    |
| Emerson School                                        | 2,396.00    |
| Geary School                                          | 1,870.00    |
| Guadalupe School                                      | 3,621.00    |
| Hawthorne School                                      | 1,393.00    |
| Horace Mann School                                    | 1,432.00    |
| John Muir School                                      | 2,462.00    |
| John Swett Junior High School                         | 2,910.00    |
| Lowell High School                                    | 8,894.00    |
| Marina Junior High School                             | 4,236.00    |
| Monroe School                                         | 4,974.00    |
| Polytechnic High School                               | 8,730.00    |
| Samuel Compers Trade School<br>(Vertical radio tower) | 635.00      |
| Sherman School                                        | 3,546.00    |
| Washington Irving School                              | 3,185.00    |
| West Portal School                                    | 3,122.00    |
| Winfield Scott School                                 | 4,740.00    |
| Commodore Sloat School                                | 3,391.00    |
| Francis Scott Key School                              | 3,478.00    |

Interior and exterior painting

|                      |           |
|----------------------|-----------|
| Bret Harte School    | 9,241.50  |
| Dudley Stone School  | 5,300.00  |
| Raphael Weill School | 10,090.00 |

Total \$104,716.50

Board of Education property

Fifth Street and Market Street

Painting work  
Roofing

6,399.00  
7,483.00

Total 13,882.00

## DEPARTMENT OF PUBLIC HEALTH

San Francisco Hospital

|                                                                                                  |                 |             |
|--------------------------------------------------------------------------------------------------|-----------------|-------------|
| Wood grilles over glass roof,<br>east and west porches                                           | \$ 4,051.67     |             |
| Laying duraflex flooring on second<br>floor level of the passage between<br>ward buildings 3 & 4 | 389.00          |             |
| Water-proofing the brickwork                                                                     | <u>2,481.00</u> |             |
| Total                                                                                            |                 | \$ 6,921.67 |

Laguna Honda Home

|                            |                 |          |
|----------------------------|-----------------|----------|
| Road work                  | \$ 595.00       |          |
| Repairs to the wooden tank | <u>1,675.00</u> |          |
| Total                      |                 | 2,270.00 |

Health Center Building

|                                                                                  |              |        |
|----------------------------------------------------------------------------------|--------------|--------|
| Installation of acoustical tile<br>in Auditorium and<br>Health Center Building   | \$ 410.00    |        |
| Installing steel grilles at<br>Women's Detention ward,<br>Health Center Building | 237.00       |        |
| Installing 5 additional steel<br>grilles at Women's Detention ward               | <u>96.00</u> |        |
| Total                                                                            |              | 743.00 |

## DEPARTMENT OF ELECTRICITY

## Central Fire Alarm Station

Jefferson Square

Mechanical ventilating system 2,993.00

## MAYOR'S OFFICE

|                                                                                     |              |        |
|-------------------------------------------------------------------------------------|--------------|--------|
| Furnishing and installing wall covering<br>Mayor's office and small hall, City Hall | \$ 194.00    |        |
| Re-conditioning and cleaning crystal<br>fixture in Mayor's office                   | <u>97.50</u> |        |
| Total                                                                               |              | 291.50 |

## ASSESSOR'S OFFICE

Revisions to Assistant Assessor's office  
Room 101, City Hall 1,431.00

## REGISTRAR OF VOTERS

Acoustical treatment in Registrar of Voters  
Tabulation Room, City Hall 985.00

## CITY HALL

|                                                                                       |           |
|---------------------------------------------------------------------------------------|-----------|
| Installation of four wooden flag poles to<br>comply with State Bear Flag requirements | \$ 648.00 |
|---------------------------------------------------------------------------------------|-----------|

## JUVENILE COURT

|                                                                                                                            |               |           |
|----------------------------------------------------------------------------------------------------------------------------|---------------|-----------|
| Juvenile Detention Home<br>Otis Street, between McCoppin and<br>Duboce Avenue - interior painting                          | \$ 3,995.00   |           |
| Alterations and additions to Super-<br>intendent's residence for Girls'<br>Dormitory, Juvenile Court, Laguna<br>Honda Home | 4,849.00      |           |
| Construction of a wooden fence for<br>Girls' Dormitory, adjacent to Super-<br>intendent's Residence, Laguna Honda Home     | 998.00        |           |
| Miscellaneous repairs to the Laguna Honda<br>Children's Home, Laguna Honda Home                                            | 661.00        |           |
| Installation of guard rail fence on roof<br>of Laguna Honda Children's Home, Laguna<br>Honda Home                          | <u>199.40</u> |           |
|                                                                                                                            |               | 10,702.40 |

## POLICE DEPARTMENT

|                                                                                                                  |          |
|------------------------------------------------------------------------------------------------------------------|----------|
| Southern Police Station garage<br>Furnishing and installing gasoline storage<br>System, Fourth and Clara Streets | 1,120.00 |
|------------------------------------------------------------------------------------------------------------------|----------|

## SHERIFF

|                                                       |               |          |
|-------------------------------------------------------|---------------|----------|
| County Jail #2, San Mateo County<br>Repair of windows | \$ 987.00     |          |
| Repair of Duraflex flooring                           | 350.00        |          |
| Repair of steel water tank                            | 800.00        |          |
| Bolts for water tank connections                      | <u>237.00</u> |          |
|                                                       |               | 2,374.00 |

## PURCHASER OF SUPPLIES

|                                                                                 |               |          |
|---------------------------------------------------------------------------------|---------------|----------|
| Shed for Shop No. 2<br>2800 Alameda Street                                      | \$ 2,615.00   |          |
| Central Warehouse, 1200-15th Street<br>Exterior painting                        | 1,425.00      |          |
| Painting of steel building at gasoline<br>supply station - 15th & Harrison Sts. | 492.00        |          |
| Reconstruction of chain link fence at<br>the gasoline supply station            | <u>484.11</u> |          |
|                                                                                 |               | 5,016.11 |



## M. H. de YOUNG MEMORIAL MUSEUM

|                     |           |
|---------------------|-----------|
| Repairs to the roof | \$ 848.00 |
|---------------------|-----------|

## CALIFORNIA PALACE OF THE LEGION OF HONOR

|                                                                                                         |                 |          |
|---------------------------------------------------------------------------------------------------------|-----------------|----------|
| Repairing statuary                                                                                      | \$ 460.00       |          |
| Removing cast stone modillions under main<br>cornice of the California Palace of the<br>Legion of Honor | <u>1,515.00</u> |          |
| Total                                                                                                   |                 | 1,975.00 |

## HOSPITALITY HOUSE, CIVIC CENTER PLAZA

|                                     |               |          |
|-------------------------------------|---------------|----------|
| General construction of a kitchen   | 3,428.30      |          |
| Vestibule for the Hospitality House | <u>422.00</u> |          |
| Total                               |               | 3,850.30 |

## DORMITORIES FOR SERVICE MEN

|                                                 |                 |           |
|-------------------------------------------------|-----------------|-----------|
| <u>Civic Center Plaza</u>                       |                 |           |
| 5 Demountable dormitories                       | 34,600.00       |           |
| 4 2-story demountable dormitories               | 39,488.00       |           |
| 1 1-story demountable office building           | 2,037.00        |           |
| <u>Hamilton Square, Post &amp; Steiner Sts.</u> |                 |           |
| 1 2-story dormitory building                    | <u>9,982.00</u> |           |
| Total                                           |                 | 86,107.00 |

## CIVILIAN DEFENSE

Control Centers

|                                                       |                 |           |
|-------------------------------------------------------|-----------------|-----------|
| Unit #2 for Civilian War Council<br>Buena Vista Park  |                 |           |
| General construction                                  | 11,297.97       |           |
| Unit #3 for Civilian War Council<br>Laguna Honda Home |                 |           |
| General construction                                  | <u>2,492.30</u> |           |
| Total                                                 |                 | 13,790.27 |

---

Grand total . . . \$397,132.30

BUREAU OF SEWER REPAIR

Emile F. Muheim, Superintendent

The Bureau is responsible for the general maintenance and emergency repairs of 750 miles of sewers, 40,000 catchbasins, 12,000 manholes, and the cleaning of sumps at all of the sewage pumping stations.

The personnel includes the following classifications:

|       |    |                           |
|-------|----|---------------------------|
|       | 1  | Superintendent            |
|       | 2  | Assistant superintendents |
|       | 2  | General foremen           |
|       | 22 | Main sewer cribbers       |
| 10 to | 20 | Side sewer cribbers       |
|       | 7  | Bricklayers               |
|       | 12 | Hod carriers              |
|       | 17 | Sewer cleaners            |
|       | 19 | Laborers                  |
|       | 16 | Truck drivers             |
|       | 1  | Engineering inspector     |
|       | 1  | Clerk                     |
|       | 2  | Compressor operators      |

To provide adequate service for the public, general maintenance and emergency repairs, the field crews are employed



EQUIPMENT USED IN CLEANING SEWERS

eight hours per day, Monday through Friday. An emergency force is on duty from five P.M. to one A.M. on week-days throughout the year, and from four P.M. until twelve midnight on Saturdays, Sundays, and holidays during the winter months.

During the past fiscal year 340 main sewer breaks were repaired, 668 side sewers were constructed or repaired, 5786 complaints were investigated and adjusted.

Four eductors and one air compressor are the only pieces of equipment owned and operated by the City. Five dump trucks for handling material, and five trucks for sewer maintenance are operated on a contract basis. Four new eductors and a mosquito control unit are on order, delivery being delayed until after the war.



EDUCTOR CLEANING CATCHBASIN

BUREAU OF STREETS

P. W. King, General Superintendent

The Bureau is responsible for the maintenance of all streets and boulevards within the City and County, including repair work on State highways. During the past year many worn-out street surfaces were repaved with asphalt wearing surface. Repairs were made to brick and basalt block pavements. One crew is assigned to the municipal railway for resurfacing street car track areas in various locations throughout the City. New concrete gutters, sidewalks, and curbing were constructed in many sections of the City. Several emergency temporary roads were built. On many major streets all pavement cracks which had developed were cleaned and filled with emulsified asphalt, gravel or sand.

The program for planing the bituminous surfaces of streets and boulevards continued throughout the year.



CLEANING PAVEMENT CRACKS



Filling pavement cracks  
with emulsified asphalt



Applying sand and gravel  
seal coat to pavement cracks

Operation and maintenance of Third Street, Fourth Street, and Islais Creek bridges were carried on at a cost of \$62,237.

The Division of Street Cleaning is responsible for the sanitation and cleaning of paved streets, pedestrian underpasses, Stockton Street tunnel, and numerous city installed pedestrian steps, as well as city-owned lots.

Miscellaneous work included the removal of sand drifts from paved streets in the Sunset and Parkside districts. Earth from slides which encroached upon the following roadways was cleared away: O'Shaughnessy Boulevard, Bayshore Boulevard, Twin Peaks and streets in Bernal Heights. Obsolete safety buttons and safety island seats were removed from various locations. Ice plant was trimmed away from gutters around Lake Merced Boulevard for a distance of four miles.

## PERSONNEL

(Exclusive of bridges and asphalt plant)

Supervisory: 1 Superintendent, 1 Supervisor, 2 General foremen

|           |                                 |                   |
|-----------|---------------------------------|-------------------|
| Per diem: | 1 Foreman asphalt finisher      | 2 Pavers          |
|           | 4 Sub-foremen asphalt finishers | 2 Rammers         |
|           | 11 Asphalt finishers            | 4 Granite cutters |
|           | 13 Asphalt workers              | 2 H & P engineers |
|           | 3 Cement finishers              | 13 Chauffeurs     |
|           | 4 Cement finishers' helpers     | 33 Laborers       |
|           |                                 | 1 Foreman laborer |

The above per diem personnel is distributed in crews as follows:

|                                   |                                     |
|-----------------------------------|-------------------------------------|
| 1 Foreman finisher                | Asphalt repairs                     |
| 2 Sub-foremen finishers           |                                     |
| 10 Finishers                      |                                     |
| 12 Asphalt workers                |                                     |
| 2 H & P engineers                 |                                     |
| 5 Chauffeurs                      |                                     |
| 1 Foreman finisher                | Crack sealing and seal coating      |
| 2 Chauffeurs                      |                                     |
| 4 Laborers                        |                                     |
| 1 Sub-foreman finisher            | Municipal railway work              |
| 8 Laborers                        |                                     |
| 2 Chauffeurs                      |                                     |
| 2 Curb setters                    | Broken and depressed curbs          |
| 4 Laborers                        |                                     |
| 2 Granite cutters                 | Cutting and repairing curbs at yard |
| 2 Pavers                          | Brick and basalt block paving       |
| 2 Rammers                         |                                     |
| 3 Cement finishers                | Sidewalks and angular corners       |
| 4 Cement finishers' helpers       |                                     |
| 1 Chauffeur                       |                                     |
| 1 Chauffeur<br>(tractor operator) | Caterpillar                         |
| 2 Laborers                        | Yard                                |
| 1 Foreman laborer                 | Dump                                |
| 1 Chauffeur                       | Compressor unit                     |
| 2 Laborers                        |                                     |
| 1 Asphalt worker                  | Clean-up crews                      |
| 12 Laborers                       |                                     |
| 2 Chauffeurs                      |                                     |

## MUNICIPAL ASPHALT PLANT

Personnel: 1 Foreman 2 Asphalt workers  
 1 Dryerman 1 Engineer  
 1 Mixerman 1 Asphalt worker (Night man for boiler room)

Output and Cost of Operation

|               | <u>Output<br/>Tons</u> | <u>Cost<br/>Labor and Materials</u> | <u>Cost<br/>Per ton</u>  |
|---------------|------------------------|-------------------------------------|--------------------------|
| July, 1943    | 2278.85                | \$ 6,169.06                         | \$2.707                  |
| August        | 1776.00                | 5,472.40                            | 3.08                     |
| September     | 1477.15                | 4,928.63                            | 3.337                    |
| October       | 1179.40                | 4,454.53                            | 3.777                    |
| November      | 1571.60                | 5,263.17                            | 3.349                    |
| December      | 1484.75                | 5,336.56                            | 3.594                    |
| January, 1944 | 1327.10                | 5,410.63                            | 4.08                     |
| February      | 1142.80                | 4,362.18                            | 3.82                     |
| March         | 1919.50                | 6,260.94                            | 3.26                     |
| April         | 1335.10                | 4,949.46                            | 3.71                     |
| May           | 1542.00                | 5,296.21                            | 3.44                     |
| June          | 1682.00                | 5,496.35                            | 3.27                     |
|               | <u>18716.25</u>        | <u>\$63,400.12</u>                  | <u>\$3.452 (Average)</u> |

Departmental Services

| <u>Department</u>       | <u>Asphalt Surfacing<br/>Square feet</u> | <u>Total Cost<br/>Labor &amp; Materials</u> |
|-------------------------|------------------------------------------|---------------------------------------------|
| Building repair         | 300                                      | \$ 1,830.76                                 |
| School yards            | 219,704                                  | 7,047.85                                    |
| Golden Gate Park        | 191,115                                  | 6,300.80                                    |
| Recreation              | 8,150                                    | 607.59                                      |
| Municipal Railway       | 390,684                                  | 57,955.11                                   |
| Police (Pistol Range)   | 3,000                                    | 148.13                                      |
| Health, S.F. Hospital   |                                          | Labor and equipm't 105.03                   |
| Water Department        |                                          | " " " 168.31                                |
| Fire Department         | 280                                      | 100.45                                      |
| Controller's office     |                                          | Labor and truck 254.10                      |
| Engineering:            |                                          |                                             |
| Major streets           | 173,010                                  | 21,291.60                                   |
| Crack sealing           |                                          | 205,800 lin.ft. 2,463.51                    |
| State highways          | 45,201                                   | 3,753.47                                    |
| Re-set signal standards | (6)                                      | 100.23                                      |
| Remove granite seats    |                                          | Labor and truck 79.22                       |
| Misc'l sidewalks        |                                          | 1053 square ft. 377.04                      |
| Sewer repairs:          |                                          |                                             |
| Main sewers             |                                          | 1918 tons sand 2,307.66                     |
| Side sewers             | 18,988                                   | 8,539.79                                    |
| Richmond Sewage Plant   | 4,505                                    | 217.81                                      |
|                         |                                          | <u>\$113,648.46</u>                         |

## GENERAL REPAIRS

|                             |                   | Cost of<br>Labor & Material |
|-----------------------------|-------------------|-----------------------------|
| Asphalt surfacing           | 1,379,134 sq. ft. | \$ 112,108.84               |
| Basalt repairs              | 460 " "           | 164.91                      |
| Brick repairs               | 17,372 " "        | 9,564.20                    |
| Crack sealing               | 434,326 lin.ft.   | 10,240.04                   |
| Concrete pavement & gutters | 8,568 sq. ft.     | 4,420.96                    |
| Department of Electricity   | 1,023 " "         | 276.08                      |
| Concrete curbs              | 958 lin. ft.      | 823.06                      |
| Duck bumps (made)           | 260               | 237.38                      |
| " " (set)                   | 104               | 359.96                      |
| Fire Department (paving)    | 138 sq. ft.       | 48.69                       |
| Granite curb re-set         | 16,253 lin.ft.    | 16,808.48                   |
| " " redressed               | 6,528 " "         | 9,250.96                    |
| Sidewalks, concrete         | 84,393 sq. ft.    | 28,420.11                   |
| Temporary roads             |                   | 13,353.72                   |
| *Miscellaneous work         |                   | 40,884.99                   |
| Curb patching               |                   | 59.60                       |
| Raising manholes            |                   | 1,289.53                    |
|                             |                   | <u>\$248,311.51</u>         |

\*Miscellaneous Work

|               | <u>Labor</u>       | <u>Equipment</u>  | <u>Materials</u> | <u>Overhead</u>   | <u>Totals</u>      |
|---------------|--------------------|-------------------|------------------|-------------------|--------------------|
| July, 1943    | \$ 1,839.93        | \$ 258.84         | \$ 9.44          | \$ 321.69         | \$2,429.90         |
| August        | 1,946.07           | 294.19            | 33.40            | 449.08            | 2,722.74           |
| September     | 969.81             | 147.53            | 10.78            | 4.68              | 1,132.80           |
| October       | 2,236.61           | 297.00            | 32.11            | 286.65            | 2,852.37           |
| November      | 2,012.94           | 373.21            | 8.77             | 340.20            | 2,735.12           |
| December      | 3,417.58           | 554.05            | 7.82             | 826.71            | 4,806.16           |
| January, 1944 | 3,315.53           | 551.73            | 14.32            | 630.36            | 4,511.94           |
| February      | 5,386.66           | 847.26            | 49.90            | 888.64            | 7,172.46           |
| March         | 2,705.17           | 399.29            | 8.75             | 399.09            | 3,512.30           |
| April         | 2,375.27           | 324.23            | 117.44           | 310.96            | 3,127.90           |
| May           | 3,063.49           | 382.17            | 133.46           | 462.51            | 4,041.63           |
| June          | 1,293.41           | 334.58            | 35.06            | 176.62            | 1,839.67           |
|               | <u>\$30,562.47</u> | <u>\$4,764.08</u> | <u>\$461.25</u>  | <u>\$5,097.19</u> | <u>\$40,884.99</u> |

The above costs are for the following miscellaneous work:

Removal of old traffic markers, safety buttons, safety island seats, eliminating existing bumps from safety zones, and burning off white traffic lines on streets.

After heavy winter storms, trees and debris were carted away, and spillways at various locations throughout the City were cleaned.

Around Lake Merced Boulevard, ice plant was removed from the gutters and equestrian paths along the boulevard were swept clean of rocks.

Civilian Defense barrels (abandoned) were removed from street corners.

The regular maintenance program of cleaning and repairing City-owned stairways was continued throughout the year.

All debris was removed from the asphalt plant and curb yard.

Cleaning up landslides at O'Shaughnessy Boulevard, Bernal Heights, Bayshore Boulevard and Twin Peaks. At 17th and Clayton Streets, earth slide was removed and a new basalt wall built.

Cleaning up three WPA yards, and removing stored lumber.

Cartage of equipment; and hauling basalt blocks from Bush Street Police Station.

Clearing of sand drifts from the roadways of many streets in the Sunset and parkside districts.



## BITUMINOUS STREET SURFACES PLANED

(Work performed under contract)

|                                               | Sq. Ft.<br><u>Area</u> | <u>Cost</u> |
|-----------------------------------------------|------------------------|-------------|
| Geary Blvd., 25th Ave. to Presidio Ave.       | 93,900                 | \$1,537.44  |
| Scott St., Jackson Street north               | 73,920                 | 1,788.32    |
| Divisadero St., Lombard St. to Marina Blvd.   | 98,560                 | 1,309.75    |
| Broderick St., Lombard St. to Marina Blvd.    | 80,640                 | 1,254.39    |
| Beach St., Baker to Fillmore Street           | 109,200                | 1,259.38    |
| Bay St., Scott to Broderick Street            | 30,800                 | 528.94      |
| Baker St., Richardson Ave. to Marina Blvd.    | 63,000                 | 931.94      |
| Francisco St., Baker to Scott Street          | 11,900                 | 100.75      |
| Francisco Street, Scott to Baker Street       | 35,700                 | 806.00      |
| North Point Street, Scott to Baker Street     | 47,600                 | 403.00      |
| Retiro Way, Fillmore to Beach Street          | 17,280                 | 251.88      |
| Alhambra St., Cervantes Blvd. to Scott St.    | 44,800                 | 629.69      |
| Lombard St., Lyon St. to Richardson Ave.      | 67,680                 | 629.69      |
| Chestnut St., Scott St. to Richardson Ave.    | 51,200                 | 654.88      |
| Cervantes Blvd., Fillmore St. to Marina Blvd. | 66,600                 | 604.50      |
| Pierce St., Chestnut to Beach Street          | 34,800                 | 579.31      |
| Jackson St., Fillmore St. to Van Ness Ave.    | 102,400                | 1,435.69    |
| Masonic Avenue, Hayes to Fillmore Street      | 94,600                 | 1,095.66    |
| Marina Blvd., Buchanan to Baker Street        | 186,000                | 2,330.16    |
| Jefferson St., Webster to Fillmore Street     | 15,860                 | 201.50      |
| Stanyan Street, Fulton to Turk Street         | 39,560                 | 604.50      |
| Grove St., Fillmore St. to Van Ness Ave.      | 197,120                | 1,561.94    |
| Grove St., Larkin to Market Street            | 19,320                 | 403.00      |
| Webster Street, Turk to Sutter Street         | 74,300                 | 982.31      |
| Pierce Street, Haight to Oak Street           | 24,770                 | 377.81      |
| McCoppin Street, Market to Mission Street     | 37,500                 | 541.54      |
| Otis St., McCoppin St. to Van Ness Ave. So.   | 26,880                 | 239.28      |
| Clayton Street, 17th St. to Market Street     | 83,200                 | 1,108.25    |
| Turk Street, Gough to Market Street           | 117,740                | 2,702.82    |
| Gough Street, Market to Page Street           | 10,360                 | 113.50      |
| 35th Ave., Lincoln Way to Lawton Street       | 102,400                | 1,248.50    |
| Geary Street, 25th to 41st Avenue             | 311,496                | 4,182.38    |
| Turk St., Gough to Divisadero Street          | 171,600                | 2,619.50    |
| Bryant St., 20th St. to Army Street           | 149,175                | 1,574.22    |
| Dolores Street, Market to 23d Street          | 245,750                | 3,608.74    |
| San Jose Ave., Monterey Blvd. and Sagamore    | 303,600                | 4,285.82    |
| San Jose Ave., 30th and Brook Sts.            | 189,600                | 2,468.39    |
| Franklin Street, Turk to Market               | 72,000                 | 1,246.79    |
| Duboce Avenue, Market to Fillmore Street      | 107,939                | 1,385.32    |
| Fillmore Street, Fulton to California St.     | 74,102                 | 1,964.62    |
| 18th Avenue, Lincoln Way to Vicente Street    | 319,480                | 3,248.61    |
| Ulloa Street, 19th to 37th Avenue             | 295,250                | 3,426.57    |
| 37th Avenue, Ulloa to Sloat Blvd.             | 131,692                | 957.13      |
| 23d Avenue, Taraval St. to Wawona Drive       | 74,800                 | 831.20      |
| Ulloa Street, 18th to West Portal Ave.        | 74,840                 | 1,057.88    |
| Laguna Honda Boulevard                        | 5,200                  | 75.56       |
| Miraloma Dr., Portola Dr. to Yerba Buena Ave  | 71,000                 | 793.41      |

## Bituminous Street Surfaces Planed - Continued

|                                                | Sq. Ft.<br><u>Area</u> | <u>Cost</u>     |
|------------------------------------------------|------------------------|-----------------|
| Yerba Buena Ave., Miraloma Dr. to Plymouth Ave | 36,750                 | \$ 403.00       |
| Plymouth Ave., Yerba Buena to Ocean Ave.       | 136,800                | 1,120.85        |
| Diamond Street                                 | 33,600                 | 453.38          |
| Chenery Street, Diamond to 30th Street         | 47,530                 | 604.50          |
| Capistrano Ave., San Jose Ave. to Isabella St. | 49,240                 | 680.06          |
| Chenery St., 30th St. to Diamond Street        | 19,080                 | 831.19          |
| Tiffany Street, Duncan to 29th Street          | 28,500                 | 277.06          |
| Shotwell Street, 20th St. to Army Street       | 211,200                | 2,972.15        |
| Valencia Street, Market to 14th Street         | 40,640                 | 478.56          |
| Oakdale Avenue, Selby to 3d Street             | 156,000                | 1,712.75        |
| Bayshore Blvd., Tunnel to Hester Street        | 50,100                 | 705.25          |
| O'Farrell Street, Broderick to Franklin St.    | 158,120                | 1,977.22        |
| Evans Avenue, 3d to Donohue Street             | <u>789,820</u>         | <u>2,392.81</u> |
| Totals                                         | 6,414,494              | \$76,551.24     |

Unit cost \$0.0104 per square foot



LAKE MERCED BOULEVARD  
Damage to roadway caused by storm

## BRIDGES

Personnel:           1 Chief engineer  
                   10 Operating engineers  
                   1 Relief engineer  
                   10 Watchmen  
                   1 Relief watchman

Cost of Operation: Third Street   \$22,101.26  
                       Fourth Street   \$21,010.39  
                       Islais Creek   \$19,125.78

|                       |               |
|-----------------------|---------------|
| Salaries and wages    | \$57,118.71   |
| Retirement            | 2,618.82      |
| Power                 | 2,222.36      |
| Miscellaneous charges | <u>277.54</u> |
|                       | \$62,237.43   |

## SUMMARY

|                       |                  |
|-----------------------|------------------|
| Asphalt plant         | \$ 63,400.12     |
| Departmental services | 113,648.46       |
| General repairs       | 248,311.51       |
| Miscellaneous work    | 40,884.99        |
| Heater-planer work    | 76,551.24        |
| Bridges               | <u>62,237.43</u> |
|                       | \$605,033.75     |

## EQUIPMENT

18 Usable trucks  
 2 Obsolete and damaged trucks  
 1 8-ton Austin roller  
 1 8-ton Galion roller  
 1 #60 McCormick-Deering tractor  
 1 Sand loader  
 1 Hand-operated Austin road blade  
 3 Bitumuls spraying machines  
 1 Mud jack  
 2 Surface heaters - large - power-driven  
 1 Surface heater - small  
 2 Hand-operated asphalt burners  
 2 Truck mounted compressors  
 1 Trailer compressor

Miscellaneous small equipment, weed  
 burners, hand sprays, etc.

## DIVISION OF STREET CLEANING

The Division is responsible for the sanitation and cleaning of 1550 curb miles of paved streets within the City and County of San Francisco, five pedestrian underpasses, Stockton Street tunnel, numerous pedestrian stair and passage-ways. City-owned lots in built-up sections are kept in a clean and sightly condition. All of the street sweepings and debris are collected and hauled away to dumping grounds where they are disposed of by the fill and cover method.

|            |                      |
|------------|----------------------|
| Personnel: | 1 Supervisor         |
|            | 4 District directors |
|            | 12 Labor sub-foremen |
|            | 44 Chauffeurs        |
|            | 1 Gardener           |
|            | 268 Laborers         |

The regular work week is five days or forty hours. One sweeping crew with automotive equipment works five nights each week. On Saturday and Sunday mornings skeleton crews work four hours, covering the main business sections.

The City is divided into four major districts each being under the supervision of a district director. Each of these districts is divided into three sub-districts which are swept by the respective gangs and truck crews under the supervision of a labor sub-foreman. Eleven gangs operate during the daytime, one at night. The business sections of the City are swept by 124 blockmen.

There are five routes which are covered by the motor sweepers, four in the daytime and one at night. There are six routes covered by motor flushers, five during the daytime and one at night. In addition, there are seven street can routes and two utility routes in outlying districts, one truck being assigned to each route. A rented truck flushes minor streets in the hilly sections of the City.

However, because of the existing shortage of laborers, absences for vacations and other causes, we have an average of approximately 225 laborers actually working daily. Consequently, the gangs are now proportionately less in numbers.

The cost of operation for the division, including the purchase of additional equipment, was \$772.355.

|            |                    |
|------------|--------------------|
| Equipment: | 23 Trucks (pickup) |
|            | 3 Trucks small     |
|            | 1 Truck, rented    |
|            | 4 Motor sweepers   |
|            | 5 Motor flushers   |
|            | 100 Street buggies |
|            | 1900 Street cans   |
|            | 63 Can Sheds       |

|                     |                       |
|---------------------|-----------------------|
| Equipment on order: | 8 Trucks (new)        |
|                     | 1 Motor sweeper (new) |
|                     | 1 Flusher (new)       |



For use in the protection of public buildings  
Sand treated with 2% asphalt

BUREAU OF ACCOUNTS

F. W. McKenzie, Supervisor

This Bureau controls the budgetary and financial activities of the Department of Public Works. It is the point of origin of documents dealing with the disbursement of funds, and their guidance through required procedures until final liquidation.

The operating functions include control of payroll procedure, personnel records and field timekeeping; purchase order requisitions, sub-storeroom and inventories; automotive expenditures, gasoline and tire records; work order job costs and invoicing, side sewer job and refund accounts; State gas tax subventions; the cash revolving fund for the department; budget preparation and control; operation of the Corporation Yard telephone exchange; and the supplying of clerical service to all bureaus of the Corporation Yard.

Personnel:      1 Supervisor in charge of the Bureau  
                  1 Head clerk  
                  4 Senior clerks  
                 10 General clerks  
                  3 General clerk-stenographers  
                  4 General clerk-typists  
                  1 Telephone operator

There are three subdivisions: Payrolls and Personnel, with a senior clerk and four assistants; Purchasing and Stores with a senior clerk and two assistants; Gas Tax Subventions with a senior clerk and one assistant.

Three field timekeepers check outside operations for payroll verification, and also act as paymasters on semi-monthly pay-days.

Budgeted funds, subject to control, totaled \$4,833,901

for the year, appropriated to --

|                                                |                |
|------------------------------------------------|----------------|
| Bureau of Accounts                             | \$ 35,034      |
| Bureau of Architecture                         | 16,740         |
| Bureau of Building Inspection                  | 54,550         |
| Bureau of Building Repair                      | 463,139        |
| Central Permit Bureau                          | 12,939         |
| Bureau of Engineering                          | 879,123        |
| Sewage Disposal Plant                          | 96,413         |
| Sewage Pumping Stations                        | 40,367         |
| General Office                                 | 49,486         |
| Bureau of Sewer Repair                         | 425,261        |
| Bureau of Streets:                             |                |
| Street Repair                                  | 461,768        |
| Street Cleaning                                | 779,913        |
| Bridges                                        | 69,049         |
| Gas Tax (Special Road Improvement)             | 744,469        |
| Gas Tax - Street construction                  | 246,600        |
| Special Gas Tax - Street Improve-<br>ment Fund | <u>459,050</u> |
| Total -                                        | \$4,833,901    |

In addition, there was recorded expenditures of \$56,578 for side sewer installations and repair. Accounts were kept of \$934,546.81 expended in inter-departmental service under work order procedure for the following divisions of the City government:

|                              |                   |
|------------------------------|-------------------|
| Schools                      | \$292,981.89      |
| Health                       | 25,600.61         |
| Recreation                   | 34,213.34         |
| Library                      | 9,287.87          |
| Public Building Improvements | 25,138.97         |
| Gas Tax Accounts             | 273,530.90        |
| Engineering                  | 81,878.40         |
| Sewage Plants                | 9,422.73          |
| Municipal Railway            | 62,194.57         |
| Miscellaneous                | <u>120,297.53</u> |
| Total -                      | \$934,546.81      |

Requisitions for purchase orders were issued totaling 4,153, and there were 1,490 work orders cleared.

The Bureau has a central office at the City Hall and a division handling operating accounts at the Corporation Yard where the greater number of employees are assigned.

BUREAU OF BUILDING REPAIR

R. A. Chisholm, Superintendent

During the past year the Bureau furnished labor and materials for maintenance and repairs for the following City-

owned buildings: City Hall, Civic Center  
Health Center, Civic Center  
Hall of Justice, Kearny & Washington Sts.  
11 Police stations  
54 Fire houses  
49 Auxiliary fire houses  
100 Public school buildings

Personnel:

- 1 Superintendent
- 1 Assistant superintendent
- 1 General foreman carpenter
- 1 Foreman carpenter
- 20 Carpenters
- 1 General foreman painter
- 4 Foremen painters
- 30 Painters
- 1 General foreman plumber
- 21 Plumbers
- 1 General foreman sheet metal worker
- 11 Sheet metal workers
- 1 General foreman steam fitter
- 10 Steam fitters
- 1 General foreman electrician
- 13 Electricians
- 1 Foreman cement finisher
- 5 Cement finishers
- 7 Cement finishers' helpers
- 1 Foreman glazier
- 3 Glaziers
- 2 Chief engineers of stationary steam engines
- 7 Engineers of stationary steam engines
- 5 Firemen of stationary steam engines
- 16 Elevator operators
- 1 Foreman janitor
- 75 Janitors

The cost of operation of all public buildings exclusive of public schools was \$270,000 including janitorial and engineering services.

The general maintenance includes repair work and painting of public buildings, traffic striping of streets, boulevards and highways. The Bureau furnishes labor and material for traffic striping, pedestrian lane markings at street intersections, bus stop zones, safety zones, and markings for loading and parking zones on curbs. Cost of labor and materials, \$500,000.



CIVILIAN DEFENSE

The inception and history of this activity and the part played by the Department of Public Works will be outlined in its entirety since it has not been previously reported on and has now practically passed into the realm of oblivion.

The present charter which took effect January 8, 1932, provides in section 25 - Powers and Duties of Elective Office - The Mayor:

"In case of public emergency involving or threatening the lives, property or welfare of the citizens, or the property of the City and County, the Mayor shall have the power, and it shall be his duty to summon, organize and direct the forces of any department in any needed service; to summon, marshal, deputize or otherwise employ other persons, or to do whatever else he may deem necessary for the purpose of meeting the emergency. The Mayor may make such studies and surveys as he may deem advisable in anticipation of any such emergency."

A tentative ordinance for Disaster Preparedness was submitted in November, 1934, by Mr. Thomas Larke, Jr. and sponsored by the Commonwealth Club, the San Francisco Junior Chamber of Commerce and the American Legion. The City Engineer, at the request of the then Chief Administrative Officer, A.J. Cleary, submitted a tentative ordinance in February, 1935. The two ordinances mentioned were in discussion before various civic organizations and City officials and very little progress was being made as several factions in the City were trying to get control of the proposed organization.

As the war picture in Europe grew more serious and our actual entry into war became more probable, activities throughout the country became more crystallized and took on the title of Civilian Defense.

On January 4, 1941, the then Mayor of San Francisco, the Honorable Angelo J. Rossi appointed seventeen prominent citizens representing all walks of life and activities as members of the "San Francisco Civil Defense Council" with Theo. J. Roche, then

president of the San Francisco Police Commission, as president and Jack H. Helms as executive secretary. The committee organized into various sub-committees and started making studies and plans.

On July 17, 1941, M. H. Levy of the Bureau of Engineering, acting as representative of the then Director of Public Works, attended a meeting in the offices of Mr. John R. Cahill, a prominent contractor who was chairman of the Public Works Committee of the San Francisco Civil Defense Committee. Also present were Mr. Pracy, representing the Water Department, and Mr. Helms. From this meeting, started the organization of the Public Works Service.

On August 18, 1941, the Citizens' Committee rendered its report to Mayor Rossi for the organization of the San Francisco Defense Council.

On September 23, 1941, Mr. J. A. Murphy, a banker of this City, was drafted by the City to serve as director and to organize the Civil Defense organization including the enrollment of about 25,000 volunteers to serve as air raid wardens, auxiliary policemen, auxiliary firemen, and members of rescue and public service squads in accordance with the recommendations of the Citizens' Committee.

On November 24, 1941, final passage was given the ordinance creating the San Francisco Civilian Defense Council, appointing a Director of Civilian Defense, confirming the appointment of the members of the Citizens' Committee, and adding thereto as ex-officio members, the heads of the various departments and city officials whose departments would be active in the work. The Director of Public Works and the Manager of Utilities thus became members of the Council.

The following main services were established: Air Raid Warden, Auxiliary Police, Auxiliary Fire, Rescue Party, Medical Corps, Messenger, Drivers, Demolition and Road Clearance, and

## Decontamination.

To the Public Works Department was assigned the responsibilities of Demolition and Road Clearance Service and Decontamination Service. The Director of Works (Mr. A. D. Wilder from the start until his death in October, 1942, and Mr. H. C. Vensano from October, 1942, until this date) was in charge with the title of Chief of Service. Sherman P. Duckel of the Bureau of Engineering was First Assistant Chief and in active charge of both services.

### Demolition and Road Clearance Service

Investigations were started as to number of districts, boundaries of districts, and location of headquarters in various districts, also as to materials and tools necessary. All contractors were contacted and lists made showing their equipment in San Francisco, where located, and the names, addresses and phone number of person to be contacted - day or night - when necessary to obtain use of the equipment. These lists were reviewed regularly so as to keep them up to date.

December 7, 1941 - Pearl Harbor - immediately put all preparations into high gear. It was decided that the Director of Public Works and Manager of Public Utilities would act in close association, the Public Works Department taking care of removing debris and clearing streets, and the Water Department to shut off its mains and repair and maintain its lines. All the Public Utility companies, such as light, power, telephone, and privately owned street car lines, were called into consultation and agreed to cooperate with the Department of Public Works as to clearing streets and repairing their services. Their own men were to attend to or supervise any work on their utilities.

The City was divided into 22 districts which were selected as to boundaries and areas by the topography of the City, the density of population, the class of buildings and importance to

the war and the industries affected. Headquarters were selected, usually in fire-houses so as to be centrally located for the district in which they were located. Each headquarters had a tool box equipped with picks, shovels, crowbars, hammers, saws, gads, plugs for water pipes, and all other tools necessary for clearing streets in case of bombing attacks. Reserve supplies of lumber, sewer pipe, brick, cement, and oakum were stored at four strategic places in the City to be available in case of damage to the sewers.

Labor organizations were contacted and they submitted names and addresses of their members. The Office of Civilian Defense registered citizens of the City and, in accordance with their capabilities and desires, their names were submitted to the various branches of Civilian Defense. A subject of a country with which the United States was at war was not eligible to serve no matter how long he had resided in the United States; aliens of other countries were accepted if they had their first papers. All employees of the Department of Public Works were drafted for service in the Civilian Defense; most of them were assigned to the Road Clearance and Demolition Service (which became the office designation for this service) or to the Decontamination Service. The names of services were given by the Civil Defense Organization which had supervision for the entire country.

The men who were chosen were assigned to the district in which they lived as this organization was to be available at night and due to blackout regulations, it would be necessary for the men to walk to the headquarters in their district when the sirens were sounded or on what was known as the red signal.

All members were given identification cards and armbands, permitting them to leave their houses after the sirens sounded. No other citizens were allowed on the streets after the alarm was

sounded with the accompanying blackout. Furniture movers volunteered the use of their trucks and drivers. These trucks were equipped with proper lights and could operate during a blackout. They were under instructions to report to an assigned depot on a red signal and then were to be used to transport men and equipment to the scenes of any incidents.

As the Federal Government made them available, gas masks were furnished to the men who were given instructions by a trained instructor on the use and care of the masks and also on the characteristics of and treatments for the various types of gas which might be employed by an enemy. Some of the men took courses given by the Civilian Defense; leaders and key men took courses given by the U. S. Army here and at Stanford University. But, as a general rule, no training program was outlined as the civilian duties of the members were similar to those that they would perform in this service.



Instructions in  
the proper use and care of gas masks

During the daytime any damage from enemy action was to be attended to by the employees of the Department of Public Works and the regular crews of the utility corporations. At the sound of the siren, all men and equipment were to report to their respective yards and be dispatched from there. All operations during the daytime raids were to be under the supervision of the Department of Works, utility corporations, regular superintendents, and firemen.

Each district was in charge of a district leader who was a City employee. The men in a district were divided into four squads, each under a squad leader and an assistant, the assistant to remain at the telephone in headquarters while the squad leader took charge in the field. The members of each squad were to hold themselves available at night every fourth week by being able to reach their district headquarters within fifteen minutes after the alarm was sounded or have a substitute from another squad to substitute for him. Allocation of time was made for a year's period and cards mailed the members reminding them that it was their week to serve. It was the intention to have 60 men in each of 19 districts and 120 men in three downtown districts, making an organization of at least 1500 men; however, it was never possible to build an organization to exceed 700 men and many of these could not be relied upon. Many men were working long and irregular hours in essential war industries, others leaving the City to take out of City jobs, so the membership was subject to great fluctuations.

The General Headquarters and Control Room of the Civilian Defense was set up in the basement of the City Hall. The heads of the various services after being alerted by the telephone operators on the yellow signal, immediately proceeded to the Control room. These men used cars equipped with masked headlights. Having police permits, they could operate their cars if the blackout took place while on their way to the control room.

Each head of service had desk room and telephones so as to contact the several units in different parts of the City.

The City was later divided into three control zones and the various services had complete organizations in each of the three zones so that in case of damage to the main control room, the headquarters could be transferred to one of the zone control stations. The location of the main control room was known to the residents of the City, but the location of the zone control stations was kept secret.

#### Decontamination Service

This service dealt with the decontamination as it pertained to the cleansing of buildings and other improvements, land, streets, equipment, etc. which may have been contaminated by poisonous war liquids or gases.

Decontamination is an arduous and dangerous task and requires a trained personnel with proper equipment such as gas masks and protective equipment covering the whole body. The Army had set the requirements of the City for this service at 45 squads of ten men, or 450 men. As the average person is fearful of even the term "poison gas," it was found impossible to obtain sufficient volunteers and, consequently, it was decided to assign this work to regular City employees. Accordingly, 430 men from the Department of Works and 20 men from the Park Department were assigned to this work to be under the superintendents and foremen of the City.

The men were supplied with gas masks and protective clothing, and given the eight hour training course of the U. S. Army Chemical Welfare Service. In addition, the superintendents, foremen, crew leaders and assistant leaders (in all about 85 men) were given courses once a week for two months by a staff officer of the Civilian Defense, doctors versed in gas casualties, a

representative of the Dow Chemical Company and others. Four key men took the regular army course as given at Stanford University. The intensive training of the men was in charge of Emile F. Muheim, Superintendent of of Sewer Repair, and Peter Bernard, Chemist of the Department of Public Works.

Two Crew Gas Cleansing Stations were built and the men were given training in full regalia. The equipment for this



Decontamination crew giving demonstration

service was more elaborate than that required for any service and great difficulty was experienced in obtaining it for a part of the service. The personal equipment for each man was:

- |                                 |                        |
|---------------------------------|------------------------|
| 1 Impervious U.S. Army gas suit | 1 Pr. High top shoes   |
| 1 U.S. Army training gas mask   | 1 Pr. Cotton socks     |
| 1 Pr. Cotton gauntlet gloves    | 1 Set woolen underwear |
| 1 Pr. Rubber gauntlet gloves    | 1 Steel helmet         |





Complete outfit  
for decontamination work

In addition, equipment such as shovels, brooms, brushes, rakes, sprays, buckets, etc. was supplied. The Bureau of Streets had five new high-pressure street flushers; the Bureau of Sewer Repair had adapted four sewer eductors; the Park Department had two truck mounted tree sprays that could be used in decontaminating the vertical faces of buildings. All of the above mentioned departments had numerous dump trucks which could be utilized.

Arrangements were made with a chemical manufacturer to obtain, at any hour of the day or night, the necessary chemicals to decontaminate war gases and special pipe lines installed at the plant to discharge direct into the trucks.



Decontamination crews

The work of decontamination is very hard and unpleasant. A man equipped with his impervious suit, gloves, shoes, and breathing through a gas mask, lost three to six pounds in weight while shoveling, raking, or scrubbing for two hours. Care had to be taken that a man did not work too long in equipment or he would become weak and collapse.

During the many drills, alerts, and actual black-outs the men have performed admirably and stood ready at all times to carry out their assigned duties.

At the end of the war, the Civilian Defense Corps will be skeletonized into a Citizens' Protective Corps.







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ANNUAL REPORT

of the

DEPARTMENT OF PUBLIC WORKS

CITY AND COUNTY OF

SAN FRANCISCO

—

Fiscal Year Ending June 30, 1945





ANNUAL REPORT

of the

DEPARTMENT OF PUBLIC WORKS  
City and County of  
San Francisco

Fiscal year ending June 30, 1945

Roger D. Lapham

Mayor

Thomas A. Brooks

Chief Administrative Officer

Harry C. Vensano

Director of Public Works

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CITY AND COUNTY OF SAN FRANCISCO

DEPARTMENT OF PUBLIC WORKS

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OFFICE OF THE  
DIRECTOR OF PUBLIC WORKS

260 CITY HALL  
SAN FRANCISCO 2,  
CALIFORNIA

December 31, 1945

To the Honorable Thomas A. Brooks  
Chief Administrative Officer  
City and County of  
San Francisco, California

Dear Sir:

As provided in the Charter of the City and County of San Francisco, I herewith submit the Annual Report of the Department of Public Works concerning the operation and activities of the various bureaus in this Department during the fiscal year ending June 30, 1945.

The work of all bureaus has been greatly curtailed by the loss of qualified personnel and the lack of critical materials which were needed in the war effort. It is hoped that the many employees now in the Armed Forces and Maritime service, and mechanics on leave to work in war plants, will be returning to their former positions now that V-E day has been proclaimed. It has been very difficult to replace these employees with new personnel having the proper training and educational requirements.

Due to priority ratings for various materials, new construction has been held to a minimum and, as in the previous year, it has been difficult to take care of general maintenance and keep equipment in operation.

Respectfully submitted,

*H. C. Vensano*

H. C. Vensano, Director  
Department of Public Works



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**MAYOR**

ROGER D. LAPHAM

**CHIEF  
ADMINISTRATIVE  
OFFICER**

THOS. A. BROOKS

# ORGANIZATION CHART

## DEPARTMENT OF PUBLIC WORKS 1944-1945

CITY AND COUNTY OF SAN FRANCISCO

### DEPARTMENT OF PUBLIC WORKS

DIRECTOR

H.C. VENSANO

ASS'T DIRECTOR SIDNEY J. HESTER

#### GENERAL OFFICE

#### BUREAU OF ENGINEERING

CITY ENGINEER

JOHN J. CASEY

#### BUREAU OF ARCHITECTURE

CITY ARCHITECT

DODGE REIDY

#### BUREAU OF BUILDING INSPECTION

SUPERINTENDENT

JOHN G. LITTLE

#### BUREAU OF STREETS

GENERAL SUPERINTENDENT

PRESTON W. KING

#### BUREAU OF SEWER REPAIR

SUPERINTENDENT

EMILE MUHEIM

#### BUREAU OF BUILDING REPAIR

SUPERINTENDENT

RODERICK CHISHOLM

#### BUREAU OF ACCOUNTS

SUPERVISOR

FRANK W. MCKENZIE

#### CENTRAL PERMIT BUREAU

HEAD CLERK

SYLVAN J. ROSENBLUM

DEPARTMENT  
OF PUBLIC WORKS  
DIRECTOR  
H. C. VENSANO

CITY ENGINEER  
JOHN J. CASEY

ASSISTANT  
CITY ENGINEER  
SHERMAN P. DUCKEL

BUREAU OF  
ENGINEERING  
DEPARTMENT  
OF PUBLIC WORKS  
ORGANIZATION CHART  
1944-1945

DIVISION OF DESIGN  
SENIOR ENGINEER R. H. OWENS  
SECTIONS

- |                                       |                             |
|---------------------------------------|-----------------------------|
| 1- STANDARDS & RESEARCH               | 8- STRUCTURAL & HYDRAULIC   |
| 2- COSTS & BUDGETS                    | 9- ELECTRICAL               |
| 3- CONTRACTS & PUBLIC RELATIONS       | 10- MECHANICAL              |
| 4- UNDERGROUND STRUCTURES & UTILITIES | 11- HIGH PRESSURE SYSTEM    |
| 5- HIGHWAYS                           | 12- WORKS PLANNING          |
| 6- STORM & SANITARY SEWERS            | 13- TRAFFIC & SAFETY        |
| 7- SEWAGE DISPOSAL                    | 14- SEWAGE TREATMENT PLANTS |
|                                       | 15- SEWAGE PUMPING STATIONS |

DIVISION OF STREET IMPROVEMENTS  
ENGINEER W. C. PIDGE  
SECTIONS (Deceased May 3, 1945)

- |                           |                           |
|---------------------------|---------------------------|
| 1- ASSESSMENT PROCEEDINGS | 3- LINE & GRADE           |
| 2- SPUR TRACK PERMITS     | 4- SIDEWALKS & COMPLAINTS |

DIVISION OF SURVEYS & MAPPING  
CHIEF SURVEYOR C. H. STERN  
SECTIONS

- |            |            |
|------------|------------|
| 1- SURVEYS | 2- GRADES  |
|            | 3- MAPPING |

DIVISION OF CONSTRUCTION  
ENGINEER C. M. TAYLOR  
SECTIONS

- |                       |                           |
|-----------------------|---------------------------|
| 1- TESTING LABORATORY | 2- INSPECTION             |
|                       | 3- GARBAGE - FILL & COVER |

ADMINISTRATIVE DIVISION  
OFFICE ENGINEER L. GLICK  
SECTIONS

- |                      |                        |
|----------------------|------------------------|
| 1- CONTRACT PAYMENTS | 2- PERSONNEL & BUDGETS |
|----------------------|------------------------|



## HONOR ROLL

### Engineering Bureau

Lawrence J. Archer  
Benjamin Benas  
Joseph Corrao  
William R. Daly  
Darrell D. Davis  
Llewellyn De Cew  
Clifford J. Geertz  
Stanley C. Gerugthy  
James T. Hester  
Charles S. Hiden  
Jess L. Ingram  
Peter D. McCarthy  
Milton P. Peyre  
Ivan Sandberg  
Thomas L. Skillington  
John L. Slater, Jr.  
Michael F. Sweeney  
George E. Westlund  
Fred Winters  
Herman J. Zimmerman

### General Office

Paul Teilh

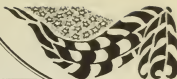
### Sewer Repair

Arthur John Brady  
William J. Murphy

### Street Repair and Street Cleaning

Jack Alexander  
John J. Andichou  
James Andrus  
J. T. Barrett  
E. J. Beard  
Edward A. Buck  
Dewey C. Buckley  
George A. Bowles  
Aloysius P. Donohue  
Chester F. Chamberlin  
Fred H. Ertman  
David A. Esola  
Robert J. Hanlon  
Eugene P. Hartnett  
W. F. Johnson  
Frank W. Krause  
C. A. LaDieu  
Raymond McKeon  
Charles McFadden, Jr.  
Harold J. Nealon  
Kevin J. Nihil  
Joseph Meister  
Vicent E. Nigro  
A. W. Peterson  
Daniel Rothbaum  
Robert Steele  
John Segale  
Raymond M. Toolis  
Clarence Wilson





## HONOR ROLL

### Building Repair

Frank W. Arnald  
Claude Byrd  
George L. Carey  
John T. Collins  
Robert J. Everson  
Frank J. Green  
William A. Kittler  
Cornelius F. Mahoney  
Richard W. Meissner  
John G. McCormack  
John J. Morris  
Daniel F. O'Leary  
Patrick C. Olson  
Patrick O'Neill  
Edward A. Plant  
Charles F. Quartiroli  
Ivar B. Ramstead  
Frank Royston  
Jeremiah Twomey

### Bureau of Accounts

Sylvester M. Cogger  
Alvin L. Crowe  
Joseph M. Hayes  
Quock Bo Lowe  
Kevin P. Ryan  
Fred G. Thomas

### Architecture

George B. Buckingham

### Building Inspection

C. Harris Potts



DEPARTMENT OF PUBLIC WORKS

H. C. Vensano, Director

The Department of Public Works, as set up under the provisions of the Charter of January 8, 1932, is administered by a Director of Public Works who is appointed by the Chief Administrative Officer and holds office at his pleasure. All employees of the Department are under civil service except the City Engineer who is appointed by the Director of Public Works and holds office at his pleasure.

The Director furnishes all information and data used by the supervisors in connection with new public improvements exclusive of those to be made by the Public Utilities, Park, and Recreation Commissions. He is responsible for repairs and maintenance of all public buildings except those under the jurisdiction of the three above-mentioned commissions.

The Department has many and varied duties and powers and has been divided into nine bureaus, known as General Administrative Office, Bureau of Engineering, Bureau of Architecture, Central Permit Bureau, Bureau of Building Inspection, Bureau of Sewer Repair, Bureau of Streets, Bureau of Building Repair and Maintenance, and Bureau of Accounts.

BUREAU OF ENGINEERING

John J. Casey, City Engineer

The work of the Bureau of Engineering is primarily concerned with highways, boulevards, streets, bridges, viaducts, sewers, sewage disposal and operation of the Richmond-Sunset sewage treatment plant, and sewage pumping stations. In connection with all major improvements carried out by the Department of Public Works, except those relating to public buildings, the Bureau of Engineering prepares plans and specifications and supervises construction in the field. The Bureau also performs many continuing functions related to traffic engineering, new subdivisions, and maintenance of maps and records for public use.

Wartime controls on labor and materials continued to restrict the volume of construction work which could be carried out during the fiscal year. It was possible to proceed with only the most urgent street and sewer reconstruction work. As indicated elsewhere in this report, the total value of all work performed under contract during the year was \$606,267, which is 25% more than last year's volume but still only about one-half of the average annual construction preceding the war.

The restrictions on construction work permitted the giving of special emphasis to the preparation of additional plans for incorporation in the post-war program. A bond issue for \$12,000,000 passed by the voters in November 1944 and \$2,200,000 in budget appropriations provided funds for the construction of new sewers, replacement of sewers insufficient in size, replacement of worn-out sewers, sewage treatment works, and sewage pumping stations. Additional office space was secured at 1663 Mission Street, about six blocks from the City Hall, and additional staff was employed specifically for

the design of sewage disposal works. Planning work also continued on major streets, boulevards, bridges, and other structures in connection therewith. Plans for a new bascule bridge at the Third Street crossing of Islais Creek were undertaken by Mr. L. H. Nishkian, Consulting Structural Engineer, under an engineering services contract approved on May 10, 1944. Mr. C. C. Kennedy, Consulting Sanitary Engineer, was engaged to advise on the plans for the sewage disposal plants.

Other Functions      Various other services of a continuing nature were performed during the year, including surveys of all types, checking of subdivisions, inspection of streets, sidewalks and bridges, and investigation of applications for street openings and spur tracks, and various types of complaints. In conjunction with the Police Department, the Bureau supervised the striping of streets for traffic and pedestrian lanes. Due to the lack of materials, the street sign program consisted mainly of replacing damaged signs. In cooperation with the Fire Department, the Bureau handled maintenance and reconstruction of the auxiliary high pressure fire system. Operation of the sanitary fill for garbage disposal was inspected continuously.

Staff      On July 1, 1944, the Civil Service Commission reclassified a number of engineering positions, resulting in broader titles and the elimination of many restricted titles. This change permitted greatly improved flexibility in the assignment and transfer of personnel to various duties. At the end of the fiscal year the staff of the Bureau consisted of 154 employees as follows:

Office

|                           |                                 |
|---------------------------|---------------------------------|
| 1 City Engineer           | 1 Cartographer and Art Designer |
| 1 Assistant City Engineer | 2 Junior Draftsmen              |
| 1 Senior Engineer         | 1 Engineering Chemist           |
| 10 Engineers              | 4 Inspectors, Public Works      |
| 4 Assistant Engineers     | Construction                    |
| 26 Designers              | 4 Clerks                        |
| 18 Senior Draftsmen       | 8 Stenographers and Typists     |
| 14 Draftsmen              | 95 Total                        |

Construction

1 Engineer  
 2 Assistant Engineers  
12 Civil Engineering Inspectors  
 15 Total

Survey

1 Engineer  
 1 Assistant Engineer  
 4 Chiefs of Party  
 5 Instrument Men  
10 Surveyor's Field Assistants  
 21 Total

Operating Force  
Richmond-Sunset Sewage Treatment Plant

1 Superintendent  
 1 Assistant Superintendent  
 1 Chief Operating Engineer  
 5 Operating Engineers  
 5 Junior Operating Engineers  
 1 Chauffeur  
 2 Laborers  
1 Clerk  
 17 Total

Sewage Pumping Stations

1 Electrical Engineering Inspector  
 2 Operating Engineers  
3 Junior Operating Engineers  
 6 Total

As shown on the organization chart contained here-  
 Organization in, the staff was divided into five divisions des-  
 igned respectively: design, street improvements,  
 surveys and mapping, construction, and administrative. The func-  
 tions of these divisions and further details regarding the work  
 done during the fiscal year are contained in the following pages.

### DIVISION OF DESIGN

The function of this division is to investigate the current and long range programs for major improvements, including highways, boulevards, major streets, bridges, viaducts, sewer systems, and sewage disposal. It prepares the plans, specifications, quantity and cost estimates for such projects. Preliminary estimates are made of the funds required for construction programs to be financed by bond issues or the tax rate. Since the necessary funds are sometimes appropriated over a period of several years, some of the larger projects are planned and completed by units in sequence.

The operation and maintenance of the Richmond-Sunset sewage treatment plant and all of the sewage pumping stations are under the supervision of this division.

Complete drainage systems are designed for slide areas in various sections of the City, with the advice of consulting geologists.

The division is divided into fifteen sections as shown on the organization chart for the Bureau of Engineering. The work of some of the sections is closely interrelated. All projects that have been completed, or on which work is under way, are described in detail in this report by the section doing the major portion of the work. The following are such sections:

- Highways
- Storm and Sanitary Sewers
- Sewage Disposal
- Structural and Hydraulic
- Electrical
- Mechanical
- Traffic and Safety

The work of a few other sections is of a routine nature only and the activities are not covered in this report. These are: Standards and Research, Cost and Budget, Contracts and Public Relations, Underground Structures and Utilities.

## HIGHWAY SECTION

This section designs freeways, parkways, main thoroughfares, boulevards, and special improvements, and cooperates with the Traffic-Safety Section in the design of channelized intersections and with the Structural-Hydraulic Section in connection with bridges, viaducts, underpasses, and grade separations. During the year plans and specifications were completed for the following projects:

From Parker to Masonic Avenue, Anza Street will be widened from 60 ft. to 80 ft., with a change in the alignment to 75 feet northerly between Parker Avenue and Blake Street. The widening and reconstruction will include two 10-ft. sidewalks, concrete curbing, and a 60-ft. paved roadway. In the near future Anza Street will be extended easterly from Masonic to St. Joseph's Avenue connecting with O'Farrell Street, which will give a direct route to the downtown shopping district. The present volume of traffic during a 12-hour period is 1,000 vehicles. After the completion of this project, the estimated volume of vehicular traffic during a 12-hour period will be 6,300 vehicles.

|                 |              |           |
|-----------------|--------------|-----------|
| Estimated cost: | Property     | \$ 98,000 |
|                 | Construction | 147,000   |
|                 | Total        | \$245,000 |

Between Douglass Street and Portola Drive, Clipper Street will be extended a distance of 2300 feet, right of way width 84 feet, with a 64-ft. paved roadway, concrete curbs, and two 10-ft. sidewalks. This project will provide a direct connection between Portola Drive and Army Street, thence to Bayshore Boulevard and Third Street. The estimated volume of vehicular traffic during a 12-hour period will be 4,000 vehicles.

|                 |              |           |
|-----------------|--------------|-----------|
| Estimated cost: | Property     | \$ 40,000 |
|                 | Construction | 272,000   |
|                 | Total        | \$312,000 |



Alemaný  
Boulevard

From Mission Street to Junipero Serra Boulevard this highway is 100 ft. wide, having two 10-ft. sidewalks and an 80-ft. roadway. The proposed improvement includes the construction of safety islands and a 4-ft. raised center island, providing for two 38-ft. roadways. A complete progressive traffic signal system will be installed for the entire length (15,870 ft.) of the proposed project. According to a recent traffic count, 11,000 vehicles used this section between Mission Street and San Jose Avenue during a 12-hour period.

|                 |              |                  |
|-----------------|--------------|------------------|
| Estimated cost: | Property     | \$ 500           |
|                 | Construction | 234,500          |
|                 | Total        | <u>\$235,000</u> |

Junipero  
Serra  
Boulevard

This boulevard from Ocean Avenue to the County Line is 125 feet wide, having two 12½-ft. sidewalks and a paved roadway 100 feet in width. Improvement will be the construction of safety islands at Ocean Avenue and at Rossmoor Drive and a 14-ft. raised center island with two 43-ft. roadways.

Estimated cost: \$65,000

Work is in progress on the following boulevard and street improvements:

San Jose  
Avenue

San Jose Avenue from Randall to Guerrero Street will be widened from 60 to 100 feet and Guerrero Street between San Jose Avenue and Army Street will be widened from 82½-ft. to 100 feet. Construction work on both streets includes two 9-ft. sidewalks and two 39-ft. roadways separated by a 4-ft. raised center island. This improvement will provide another direct connection between the southwesterly portion of the City and the industrial, commercial and downtown shopping districts. The present average

vehicular traffic count over a 12-hour period is 7500 which, it is estimated, will increase to 9500 vehicles after completion of the project.

|                 |              |                  |
|-----------------|--------------|------------------|
| Estimated cost: | Property     | \$485,000        |
|                 | Construction | 208,000          |
|                 | Total        | <u>\$693,000</u> |

Bayshore Boulevard The easterly half of the roadway of Bayshore Boulevard, between Marin and Waterloo Streets, was constructed on a fill in a subsiding area where a temporary pavement with macadam base had been constructed. Now that subsidence has ceased, temporary pavement will be replaced by a permanent pavement consisting of a concrete base 8 inches thick and a 2-inch asphaltic wearing surface with concrete parking strip 8 feet wide and 8 inches thick and a new white concrete curb.

|                              |           |
|------------------------------|-----------|
| Estimated construction cost: | \$110,000 |
|------------------------------|-----------|

Trumbull St. Widening From Mission Street easterly, this street is a direct connection between Mission Street and Alemany Boulevard, and will be widened from 50 feet to 70 feet for a distance of 1500 feet. Construction will be a 50-ft. roadway and two 9-ft. sidewalks. The easterly section of this street connecting with Alemany Boulevard has been completed.

|                 |              |                  |
|-----------------|--------------|------------------|
| Estimated cost: | Property     | \$ 65,000        |
|                 | Construction | 74,000           |
|                 | Total        | <u>\$139,000</u> |

Market Street Portola Drive This project will provide a direct route connecting the southwesterly and the easterly sections of the City. The southwesterly section is one of the fastest growing districts within the City and is contributing more traffic to the present overloaded route.

The existing roadway is narrow with poor alignment and unfavorable grades. From Junipero Serra Boulevard to O'Shaughnessy Boulevard, a distance of 6960 feet, the highway width will be 120 feet. A cross section will include one planted center island 8 ft. wide, two 41-ft. roadways, two 15-ft. sidewalks. From O'Shaughnessy Boulevard to Castro Street, a distance of 8700 feet, the project will be built as a freeway and will have two 36-ft. roadways separated by a 4-ft. center island. The entire length of the project will be 15,660 feet. The present average vehicular traffic over a 12-hour period is 11,000 which, it is estimated, will increase to 16,000 after the completion of this project.

|                 |              |                  |
|-----------------|--------------|------------------|
| Estimated cost: | Property     | \$1,743,000      |
|                 | Construction | <u>3,808,000</u> |
|                 | Total        | \$5,551,000      |

Monterey Boulevard From Ridgewood Avenue to San Anselmo Way. The boulevard is 80 feet wide with 12-ft. sidewalks and has two 18 ft. roadways separated by a planted center island 20-ft. wide. The proposed construction will be the removal of the planted center islands and the construction of a retaining wall of variable height and a 4-ft. center island with two roadways 26-ft. wide. The present average vehicular traffic over a 12-hour period is 3800.

|                              |           |
|------------------------------|-----------|
| Estimated construction cost: | \$245,000 |
|------------------------------|-----------|

STORM AND SANITARY SEWER SECTION

Duties of the section cover the following work:

- Drainage flow studies and determination of sewer sizes in the various drainage areas
- Investigations, preliminary studies, plans and specifications of proposed sewer projects
- Approval of sewer and drainage plans for new subdivisions
- Preparation of new standards for sewer design
- Investigations and reports of complaints regarding sewers and drainage
- Information and assistance to the public and other City departments regarding existing main sewers and laterals, as well as future sewers and development

Special investigations and studies were made on various subjects including:

Study of design of storm sewers entitled, "Report on Past and Present Practice of San Francisco and Other Cities for Determining Storm Flows and Sewer Sizes." Slight changes in some of the factors used in design of sewers were made as a result of this study.

Inlet time factor to be used in storm sewer design.

Handling of slaughter house wastes prior to their entry into the sewer system.

Effect of the Ridge Point Housing Project sewers on the Lower Islais Creek and Hunters Point sewer systems.

Appropriations totaling \$14,200,000 are available for the sewer and sewage disposal construction program; \$12,000,000 is from the 1944 Bond Issue and \$2,200,000 from budget funds, of which \$11,860,000 will be expended during the next five-year period for the construction of new sewers and reconstruction of old sewers. This section is now preparing design drawings, contract plans, specifications, and quantity estimates for the sewer program.

Plans, quantity estimates, and specifications have been completed for the following sewers:

The project consists of a three-compartment reinforced concrete structure, extending along Lincoln Way from Forty-eighth Avenue to the Beach. This sewer will carry the storm flow from the present Lincoln Way, Forty-eighth Avenue, and La Playa sewers, as well as the new 4-ft. circular storm sewer to be built in Lower Road (Great Highway). Overflow structures connecting this storm relief with existing sewers will be constructed in Lincoln Way at Forty-eighth Avenue and at La Playa Street. All sanitary flow will be diverted to the Richmond-Sunset Sewage Treatment Plant. This storm drain will prevent continual and serious flooding conditions along Lincoln Way, La Playa St., and Forty-eighth Ave. from Lincoln Way to Vicente St.

The structure is of reinforced concrete, having three compartments, each 6' x 6'. The outer end, at the Beach, for a distance of 240 feet, rests on reinforced concrete piles varying in length from 10 to 22 feet. The capacity of the storm drain is 1600 cubic feet per second. The invert grade at the outlet end has an elevation of -4.0, practically at the level of the highest tide on record. The storm sewer terminates at the Beach in an outlet structure having three hinged tide-gates to prevent the release of odors, and to keep wind-borne sand, and excessive tides or waves from entering the drain.

A flushing system, consisting of a fire hydrant to which a hose can be attached, is provided at the outlet structure to permit washing away of any sand which might accumulate at the outer faces of the gates preventing their opening. In addition, pipe elbows inserted in the gates near the top will automatically permit the storm water in the sewer to pass through, flushing away the sand. A pipe grille is provided at the outlet end to prevent the public from entering the storm drain.

The Lincoln Way Storm Relief, in conjunction with the proposed Vicente Street Outfall, will relieve flooding conditions

in the West Sunset, East Sunset, and West Portal drainage districts, an area comprising 4,560 acres.

Upper Army  
Sewer System  
Section "B"

The present 5-ft. diameter brick sewer which extends along Twenty-seventh Street, from Church Street to Guerrero Street, thence along Guerrero Street to Army Street, and along Army Street to San Jose Avenue, is of insufficient capacity and will be replaced by a new 6'-6" circular reinforced concrete sewer 1863 feet in length. This sewer is the lower portion of the Upper Army Street System. Plans for the other sections are now being prepared.

LaPlaya  
Sewer

This storm sewer will be a 4-ft. circular, centrifugally spun reinforced concrete pipe, 2,630 feet in length, in the Lower Road (Great Highway) from Lawton Street to the Lincoln Way Storm Relief. It will serve to relieve the serious flood conditions which have frequently occurred in this vicinity.

As this is a storm sewer with no side sewer connections, an excellent opportunity was afforded for the use of pre-cast centrifugally spun concrete pipe.

Vicente  
Outfall

The outfall in Vicente Street from Forty-fifth Avenue to the Beach, in conjunction with the one in Lincoln Way, is designed to act as a storm relief for the West Portal and a portion of the West Sunset drainage districts. It will relieve the present sewer on Forty-sixth, Forty-seventh, and Forty-eighth Avenues from Vicente Street to Lincoln Way. Capacity will be 800 cubic feet per second. The outlet end will consist of a two-compartment reinforced concrete structure on piles with wooden hinged tide-gates to prevent sand from entering the sewer. A pipe grille rack will be installed to prevent persons from entering the sewer. Sizes and lengths are to be:

1050 lin.ft. 6'-6" diameter, reinforced concrete sewer  
437 " " 2-compartment 4'-6"x5'-0" reinforced concrete sewer.

Army Street and Kansas Street In Army Street from Valencia to Kansas Street, and in Kansas Street from Army to Marin Street, the existing sewers will be cleaned; sides, arches and inverts of the sewer will be lined with 1/2-inches of gunite.

Alemanya Sewer Section "G" The existing three-compartment 7'-6" x 10' reinforced concrete sewer in Napoleon Street will be extended 473 feet to Islais Creek and will replace the old 14' x 8' wood box sewer.

Seventh St. Sewer Extension In Channel Street, under Southern Pacific Company's railroad tracks, 65 lin. ft. of 3'-0" x 4'-6" reinforced concrete sewer will replace an old wood box culvert.

Anza Street Widening The new sewers in this street will be vitrified clay pipe of the following sizes: Masonic Avenue to Parker Avenue - 18-in., 12-in. and 8-in.; Cook Street between Anza Street and Geary Boulevard - 12-in.; Blake Street between Anza Street and Geary Boulevard - 21-in.

Sewer Replacement The existing sewer in Folsom Street from Twelfth to Fourteenth Street will be replaced by 467 lin. ft. 12-in., 123 lin. ft. 21-in., and 297 lin. ft. 24-in. vitrified clay pipe, the latter two sewers being on reinforced concrete foundations.

Other old sewers that will be replaced by vitrified clay pipe are as follows:

|                   |                               |              |        |
|-------------------|-------------------------------|--------------|--------|
| Pierce Street     | - Jackson St. to Pacific Ave. | 325 lin. ft. | 12-in. |
| California Street | - Pierce to Steiner Street    | 482 " "      | 8-in.  |
| Bush Street       | - Octavia to Gough Street     | 479 " "      | 8-in.  |

Plans, quantity estimates, and specifications are under way for the following sewers:

The proposed sewer system around Lake Merced will, when completed, carry storm water to the ocean from the area within the following boundaries: On the north, Sloat Boulevard, St. Francis Boulevard, and Mt. Davidson; on the east, the ridge running south from Mt. Davidson to the County Line; on the south, the County Line between San Francisco and San Mateo; on the west, the Pacific Ocean (except the municipal golf course, the lakes, and the United States Military Reservation). The project is designed for storm water only except for one section north of Lake Merced which will be a combined sewer carrying the sanitary flow from Lakeshore Park No. 3 Subdivision to a new pumping station. It is divided into five units known as Sections "A", "B", "C", "D", and "E".

Section "A" is a combined sewer along Lake Merced Boulevard to a diversion structure 3,290 feet easterly which will divert the sewage flow to a new pumping station where it will be pumped through a force main to a trunk sewer in Eucalyptus Drive. A storm sewer will be built from the diversion structure to the existing sewer in the State Teachers' College athletic field.

Section "B" is a tunnel under Parkmerced Housing project beginning in the State Teachers' College athletic field and ending near the junction of Lake Merced Boulevard and Stanley Drive Extension.

Section "C" begins near the Lake Merced Boulevard junction, continues westward through the large parking area adjacent to the boulevard, crosses Lake Merced on a trestle to the southwest side of the lake, thence following the boulevard in a northwesterly direction to a point near the existing brick tunnel through Fort Funston.



Section "D" will be a new tunnel through Fort Funston with a large outlet structure on the Ocean Beach. Section "E" will be an extension of the existing storm drain from Stanley Drive to Lake Merced Boulevard.

At the end of the fiscal year the status of the Lake Merced sewer system was as follows: Sections "A" and "E" - Design, detail drawings, quantity estimates, and outlines of specifications for contract were finished. Sections "B", "C", and "D" - Preliminary design and details, completed. Alternate routes were investigated for the tunnel described under Section "D". Mr. Chester Marliave, Consulting Geologist, was retained by the City to investigate the conditions west of Lake Merced.

Tabulations given below show the sizes and lengths of main sewers.

#### Section "A"

|      |          |                |                                      |
|------|----------|----------------|--------------------------------------|
| 268  | lin. ft. | 3'-0"x5'-0"    | egg-shaped reinforced concrete sewer |
| 1939 | " "      | 5'-6" diameter | reinforced concrete sewer            |
| 700  | " "      | 4'-0" "        | " " lined tunnel                     |
| 207  | " "      | 4'-0" "        | " " sewer                            |
| 882  | " "      | 2'-6"x3'-9"    | egg-shaped reinforced concrete sewer |
| 942  | " "      | 2'-0"x3'-0"    | flat top reinforced concrete sewer   |

#### Sections "B", "C", and "D"

Final selections for the alignment of storm sewers have not been made.

#### Section "E"

|      |          |                |                           |
|------|----------|----------------|---------------------------|
| 2349 | lin. ft. | 5'-3" diameter | reinforced concrete sewer |
| 636  | " "      | 4'-0" "        | " " "                     |
| 545  | " "      | 4'-9" "        | " " "                     |

The new sewer for the Richmond district will relieve Lake Street Sewer System flood conditions east of Seventeenth Avenue, as well as the present over-loaded trunk sewer in Geary Boulevard west of Arguello Boulevard. The line of this sewer will follow Arguello Boulevard from a point near McAllister Street to Cornwall Street, intercepting all sewers

east of Arguello Boulevard, thence westerly along Cornwall Street to California Street, along California Street to Eighth Avenue, thence northerly along Eighth Avenue to Lake Street, thence along Lake Street to Seventeenth Avenue. At Seventeenth Avenue and Lake Street a new diversion structure will be constructed which will separate the dry weather flow from the storm water. The dry weather flow will continue west to Twenty-fourth Avenue where it will be diverted into the Richmond sewer tunnel for transmission to the treatment plant in Golden Gate Park.

The storm sewer will continue northerly along Seventeenth Avenue to the Presidio Military Reservation, and thence through the Reservation to the mouth of Lobos Creek where it will be discharged at Baker's Beach. The project is divided into four units, known as Sections "A", "B", "C", and "D".

Section "A" includes the storm sewer from its outlet in Lobos Creek, through Presidio, along Seventeenth Avenue to Lake Street, including the diversion structure in Lake Street. Lengths and sizes of main sewers required are:

|      |         |       |          |            |          |       |
|------|---------|-------|----------|------------|----------|-------|
| 1968 | lin.ft. | 6'-6" | diameter | reinforced | concrete | sewer |
| 1088 | "       | "     | 8'-0"    | "          | "        | "     |

Section "B" begins at the overflow structure at Seventeenth Avenue and Lake Street and follows Lake Street eastward to Eighth Avenue. Lengths and sizes of main sewers required are:

|      |         |             |             |            |            |          |
|------|---------|-------------|-------------|------------|------------|----------|
| 824  | lin.ft. | 6'-3"x8'-3" | reinforced  | concrete   | box        | sewer    |
| 1593 | "       | "           | 6'-0"       | diameter   | reinforced | concrete |
| 300  | "       | "           | 7'-6"       | "          | "          | "        |
| 47   | "       | "           | 5'-6"       | "          | "          | "        |
| 74   | "       | "           | 2'-6"x3'-9" | egg-shaped | reinforced | concrete |
|      |         |             |             |            |            | sewer    |

Section "C" begins at Lake Street and Eighth Avenue, follows Eighth Avenue to California Street, along California Street to Cornwall Street, thence along Cornwall Street to Arguello Boulevard and along Arguello Boulevard to Clement Street. Lengths and sizes of main sewers required are:

|      |         |       |             |            |            |          |
|------|---------|-------|-------------|------------|------------|----------|
| 1332 | lin.ft. | 7'-6" | diameter    | reinforced | concrete   | sewer    |
| 1862 | "       | "     | 6'-3"       | "          | "          | "        |
| 164  | "       | "     | 5'-0"       | "          | "          | "        |
| 30   | "       | "     | 2'-6"x3'-9" | egg-shaped | reinforced | concrete |
|      |         |       |             |            |            | sewer    |

Section "D" begins at Clement Street and Arguello Boulevard and follows Arguello Boulevard to McAllister Street. Lengths and sizes of main sewers required are:

|      |         |               |                                      |
|------|---------|---------------|--------------------------------------|
| 1535 | lin.ft. | 5'-0"         | diameter reinforced concrete sewer   |
| 745  | " "     | 3'-0" x 4'-6" | egg-shaped reinforced concrete sewer |
| 725  | " "     | 2'-6" x 3'-9" | " " " "                              |

The design drawings for all four sections have been completed. Detail plans and quantity estimates for Sections "A" and "B" have been completed and are now ready for contract specifications. The detail drawings for Sections "C" and "D" are in course of preparation.

Scott Street Sewer System This major sewer system is designed to relieve flooding which has occurred all along the present sewer system from Fell and Divisadero Streets to the intersection of Market, Church, and Fourteenth Streets. The project is being studied in five sections known as "A", "B", "C", "D", and "E". All but the upper section ("E") are being considered for immediate construction and contract drawings are being prepared for these sections. Excluding Section "E", the route being contemplated at present is:

Steiner Street - Waller Street to Duboce Avenue  
 Sanchez Street - Duboce Avenue to Fourteenth Street  
 Fourteenth Street - Sanchez to Market and Church Streets  
 Church Street - Fourteenth to Fifteenth Streets  
 Fifteenth Street - Church to Dolores Street  
 Dolores Street - Fifteenth to Seventeenth Street  
 Seventeenth Street - Dolores St. to Treat Avenue

Due to interference with Municipal Railway streetcar operations, alternate routes south of Market Street are under consideration.

The system discharges into the North Point main sewer at Seventeenth Street and Treat Avenue. It is anticipated that on Seventeenth Street from Valencia Street to Treat Avenue the sewer will be on piles.

Twenty-ninth Street Sewer The present 3' x 5' brick sewer from Dolores Street easterly 225 feet will be replaced by a new 4'-6" circular reinforced concrete sewer, and the existing brick sewer from Dolores to Sanchez Street will be

lined with gunite. From Sanchez Street to Castro Street the existing 18-in. vitrified clay pipe sewer will be replaced by a 2'-6" x 3'-9" reinforced concrete sewer.

A new sewer will be constructed in Jerrold Avenue from a point south of Bayshore Boulevard to Napoleon Street, and along Napoleon Street to Selby Street, where it will discharge into the Alemany Sewer. This project will be completed before Napoleon is improved. Test piles driven indicate that piles varying from 55 feet to 108 feet in length will be required. Following are the sizes and lengths:

|      |         |               |                                             |
|------|---------|---------------|---------------------------------------------|
| 620  | lin.ft. | 5'-0"         | circular reinforced concrete sewer on piles |
| 420  | " "     | 3'-0" x 4'-6" | reinforced concrete sewer on piles          |
| 1410 | " "     | 2'-6" x 3'-9" | " " " "                                     |
| 145  | " "     | 24" V.C.P.    | sewer encased in concrete on piles          |
| 500  | " "     | 12" V.C.P.    | sewer                                       |

To prevent flooding during rains and storms of moderate intensity in the vicinity of Potrero Avenue, between Twenty-fifth Street and Army Street, a new 2'-6" x 3'-9" reinforced concrete sewer will be constructed in Hampshire Street between Twenty-fifth Street and Army Street. It will take the flow of the Twenty-fifth Street sewer which now joins with and overloads the one on Potrero Avenue.

The existing 3' x 5' brick sewer serves the Eighteenth Street drainage district. A new sewer has been designed to replace the old brick sewer along which flooding occurs during moderate rains, particularly in the vicinity of Church Street. This project is divided into three sections as follows:

Section "A" - Eighteenth Street from Shotwell to Guerrero Street - 7'-3" diameter, reinforced concrete sewer on piles.

Section "B" - Eighteenth Street from Guerrero to Church Street - 7'-3" diameter, reinforced concrete sewer. Church to

Noe Street - 5'-3" diameter, reinforced concrete sewer. Noe to Castro Street - 5'-0" diameter, reinforced concrete sewer. Castro to Noe Street - 3'-6" x 5'-3" diameter, reinforced concrete sewer. Church Street, from Eighteenth to Twentieth Street - 21" vitrified clay pipe sewer.

Section "C" - Douglass Street between Eighteenth Street and Caselli Avenue - 2'-6" x 3'-9" reinforced concrete sewer. Caselli Avenue, from Douglass to Danvers Street - 2'-6" x 3'-9" reinforced concrete sewer. Caselli Avenue from Danvers to Eagle Street - 21" vitrified clay pipe sewer.

|                                |                                                                                                               |
|--------------------------------|---------------------------------------------------------------------------------------------------------------|
| San Jose<br>Avenue<br>Widening | From Dolores to Guerrero Street - new sewers will be vitrified clay pipe -- 24-in., 21-in., 12-in., and 8-in. |
|--------------------------------|---------------------------------------------------------------------------------------------------------------|

|                  |                                                                                                                                                               |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Stanley<br>Drive | From Vernon Street to St. Charles Avenue - catch-basins and 18-in., 15-in., 12-in., and 8-in. vitrified clay pipe culverts will connect with existing sewers. |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|

New vitrified clay pipe sewers in various sizes, as shown below, are to replace the existing sewers at the following locations:

|             |                                     |                    |
|-------------|-------------------------------------|--------------------|
| 13th St.    | - So. Van Ness Ave. to Harrison St. | - 18", 15" and 12" |
| Erie St.    | - So. Van Ness Ave. to Folsom St.   | - 15" and 12"      |
| Trainer St. | - Thirteenth to Fourteenth Sts.     | - 12" and 8"       |

## SEWAGE DISPOSAL SECTION

### Richmond-Sunset Sewage Treatment Plant Enlargement

The Richmond-Sunset Sewage Treatment Plant, put in operation in April, 1939, now serves an estimated population of approximately 190,000, and is operating at full capacity of the available units. This plant will be enlarged at an approximate cost of \$500,000 as a first step in the postwar city-wide sewage disposal program.

Plans and specifications are now being prepared for the following structures and equipment:

|                        |                                                                                                            |
|------------------------|------------------------------------------------------------------------------------------------------------|
| Pre-Treatment Building | Two new 2,000-lb. chlorinators and chlorine evaporators will be added to supplement the present equipment. |
|------------------------|------------------------------------------------------------------------------------------------------------|

|                      |                                                                                                                                                                                                                                 |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sludge Control House | The present two thickening tanks will be enlarged, approximately doubling the present capacity. Two new sludge pumps will be added and a new 5" sludge force main will be constructed to discharge to the new primary digester. |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                 |                                                                                                                                                                                                                                                                                                    |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mixing & Sedimentation Building | Two new flocculation and sedimentation tanks will be constructed, one on each side and adjoining the present tanks. These units will be the same size as the present tanks and will be equipped with the same type mixing paddles, spray system for scum removal, and sludge collecting mechanism. |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

The temporary wood superstructure over the existing tanks will be removed and a new concrete superstructure will be constructed to house all the tanks. Structural glass blocks will be used to give more uniform distribution of light. A new ventilating system will be used with natural fresh air inlets and mechanical exhaust designed for a ten-minute air change.

**Digesters**                    The present digester will be converted into a secondary digester. A new floating type cover to act as a gas-holder will replace the old fixed-type dome. The turbo mixers and all heating coils will be removed.

The new primary digester will be a pre-stressed concrete tank with a concrete arch dome, 100-ft. diameter by 34-ft. sides, equipped with new type sludge mixers and ten vertical-type internal heating coils. The two digesters will be connected by a sludge control structure which will house the measuring and circulating pumps and all control equipment.

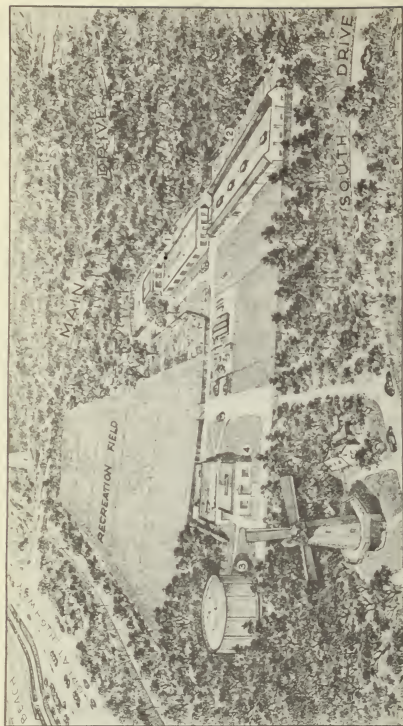
**Main Building**                The vacuum filtration system will be doubled in capacity by adding one new vacuum filter, vacuum pump and appurtenances. The present method of sludge conditioning will be converted into the "flash type" of mixing.

The piping arrangement in the elutriation system will be revised to permit single-stage washing of sludge transferred from the primary digester to the secondary, as well as two-stage washing of sludge from the secondary digester in preparation for vacuum filtration.

**Garage**                        A new eight-car reinforced concrete garage will be constructed for plant trucks and for cars of plant personnel.

**Water Supply**                In order to remove existing cross-connections with the potable City water supply and to prevent any possibility of contamination of this supply, three independent water supply systems will be installed.

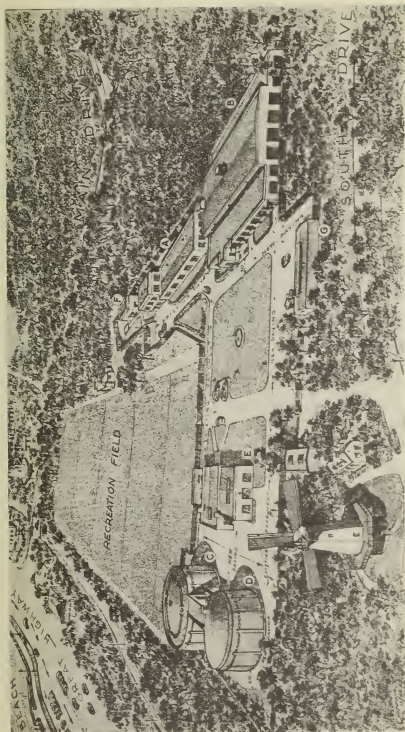
The first, directly on the City water supply, will be used only for drinking water, showers and hand wash basins. In the second, City water will also be used for pump seals, flushing water, chlorinators, sprays, etc., after a physical break has been made from the potable water supply by a 12" free fall into storage



PRESENT SEWAGE TREATMENT PLANT

- |                                    |                  |
|------------------------------------|------------------|
| 1. Pretreatment Building           | 3. Digester      |
| 2. Mixing & Sedimentation Building | 4. Main Building |





PROPOSED ENLARGEMENT OF SEWAGE TREATMENT PLANT

- |                                    |                       |
|------------------------------------|-----------------------|
| A. Pretreatment Building           | D. Secondary Digester |
| B. Mixing & Sedimentation Building | E. Main Building      |
| C. Primary Digester                | F. Water tank         |
|                                    | G. Garage             |

tanks. There will be two storage tanks with booster pumps from the storage tanks to furnish the necessary pressures. One small storage tank with two 100 gpm booster pumps will be installed in the digester control house to furnish water for the digester and Main Building. The other storage tank of 10,000 gallon capacity with two 200 gpm booster pumps will be housed in a reinforced concrete building ahead of the Pre-Treatment Building and will furnish water for the Pre-Treatment Building, the Sludge Control House and the Mixing and Sedimentation Building. The third system will furnish plant effluent for water sprays in the sedimentation and grit-grease tanks, pump seals and certain flushing connections. The pump room will be part of the new Mixing and Sedimentation Building structure and plant effluent will be furnished to the Pre-Treatment, Mixing and Sedimentation, and Main Buildings and to the Sludge Control House. There will be no interconnections between the three systems.

## STRUCTURAL AND HYDRAULIC SECTION

The work during the year was mainly the preparation of preliminary and final designs of drainage systems for slide areas, bridges, viaducts, and grade separations. Tunnels and special reinforced concrete structures in connection with sewers, and sewage disposal plants, as well as reinforced concrete walls for boulevard projects, were designed. This section acts in an advisory capacity to the Bureau of Architecture relative to structural design in connection with school buildings, fire houses, and other City-owned buildings. All plans for proposed privately owned structures that might encroach on any City street or City property are investigated. Inspection is made during the year of all major bridges, viaducts, tunnels, and other street, highway or sewerage structures under the jurisdiction of the Department of Public Works.

Records of slide movement, subsidence, and erosion at the following locations are plotted and compiled, and studies have been made for corrective measures:

|                                                           |   |   |   |
|-----------------------------------------------------------|---|---|---|
| Great Highway Beach - erosion                             |   |   |   |
| Anza Street and Parker Avenue - movement and subsidence   |   |   |   |
| Union Street east of Calhoun Street                       | " | " | " |
| Parker Avenue slide                                       | " | " | " |
| Twenty-second & Diamond Streets retaining wall - movement |   |   | " |
| Bernal Avenue retaining wall                              |   |   | " |
| Sixth Street, southeast of Brannan Street - subsidence    |   |   | " |
| Berry Street, northeast of Sixth Street                   |   |   | " |
| North Point adjacent to Treatment Plant                   |   |   | " |
| Third Street, Sixteenth to Nineteenth Street              |   |   | " |
| Embarcadero                                               |   |   | " |

Drainage systems have been built in some of the slide areas. The investigations made since completion of these systems would indicate that movement has ceased. No new slide areas developed during the past year and old ones show very little movement. This may be because of a fairly uniform distribution of rainfall throughout the rainy season.

Parker Avenue Slide      This drainage system includes a tunnel 3'-6" wide and 6'-0" high, 330 feet long, with ten drainage shafts leading from the ground surface to the roof of the tunnel. Weep holes are provided along each side above the tunnel invert. The water discharged from the tunnel varies from 30,000 to 340,000 gallons per month. Investigations are being made to extend this drain to serve an adjoining area to the south.

O'Shaughnessy Boulevard near Arroyo Way      Plans and specifications were completed for a drainage system in this slide area which has been active for the past several years. The plans provide for a series of drainage shafts approximately 4' x 6' at 12-ft. to 15-ft. centers along the line of the 8-in. diameter perforated vitrified clay drain pipe.

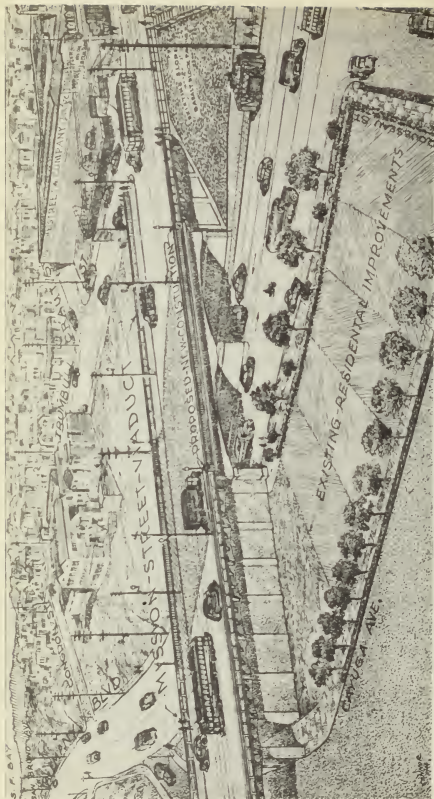
Arlington Street Drain      The drain in Arlington Street intercepts subsurface water seeping into Bernal Avenue. This system includes a series of 4' x 6' shafts, 15-ft. centers, along the line of the 8-in. perforated vitrified clay pipe. The water flow from this area varies from 62,000 to 93,000 gallons per month.

24th and Burnham Sts. Drain      To stabilize a steep slope below Market Street - this drain was built. The water flow varies from 51,000 to 311,000 gallons per month.

Gladstone Drain      This is a 6-in. perforated vitrified clay pipe about 900 feet long, backfilled with crushed rock. The water flow varies from 112,000 to 296,000 gallons per month.

Bernal Avenue      Test holes are located in this area on the western slope of Bernal Avenue. Water level readings are taken each month.

- Third St. Bridge  
over  
Islais Creek      The west half of the south pier fender and seven piles were damaged below the water line by a passing ship. The damaged piles will be replaced by new creosoted piles.
- Third St. Bridge  
over Channel St.  
Waterway      Plans and specifications have been completed to cover repairs of the northeast fender of this bridge which will include new creosoted piles and timber vales. The railing at the northwest corner was damaged by a freight car and will be repaired by the Southern Pacific Company.
- Fourth St. Bridge  
over Channel St.  
Waterway      A passing ship fouled the underside of the bridge steel work and damaged a cantilever sidewalk bracket, floor beam and several lacing angles of the bottom chord of the west bridge truss.
- Mission Street  
Viaduct      Plans, specifications, and quantity estimates have been completed for the reconstruction of that portion of the viaduct over Alemany Boulevard. This boulevard is part of the highway system in San Francisco, carrying a large volume of high speed traffic. As the existing roadways in the viaduct are too narrow to accommodate present and future traffic requirements, the span will be widened from 69 feet to 90 feet to provide for two 36-ft. roadways, separated by an 8-ft. medial strip, and two 5-ft. artificial stone sidewalks. The three existing piers between the present roadways will be removed and replaced by a single pier.



Proposed viaduct reconstruction  
Mission Street over Alemany Boulevard

## ELECTRICAL SECTION

This section prepares the plans, specifications, and cost estimates for traffic signal systems and safety lighting contracts, electrical installations for sewage pumping stations, and sewage treatment plants. Routine tests are conducted for all sewage pumping stations and electrical equipment in the Richmond-Sunset Sewage Treatment Plant. Reports and acceptance tests are made on all electrical installations of pumping equipment under the jurisdiction of the Bureau of Engineering. Plans, specifications, and cost estimates were made for the following work.

|                              |                                                                                                                                                                                            |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mission<br>Street<br>Viaduct | New street lights will be installed on both sides of the Mission Street viaduct. "Pit and tunnel" lights will be provided with proper spacing in the proposed span over Alemany Boulevard. |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nineteenth<br>Avenue<br>Park-Presidio<br>Boulevard | On November 3, 1942, all work was terminated on the traffic control signal system along Nineteenth Avenue and Park-Presidio Boulevard because of the inability to obtain certain critical materials such as controllers, cables, and appurtenances. Now that the priorities are no longer required, the traffic control system will be completed. This project will be divided into two parts. Plans and specifications have been completed for the first section of the system along Nineteenth Avenue, Vicente Street to Lincoln Way and across Golden Gate Park to Fulton Street, thence along Park-Presidio Boulevard to Lake Street. The work to be done includes the removal of 12 Wiley type traffic signals, and the installation of 102 traffic signal standards and signal heads furnished by the City. One master controller and 24 intersection controllers with control wires and appurtenances will be furnished and installed by the contractor. |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Complete plans and specifications were prepared for the installation of a new three-light traffic signal system along Lombard Street and Richardson Avenue from Van Ness Avenue to Lyon Street. Traffic signal standards and signal heads will be furnished by the City and set in place by the contractor. One master controller and intersection controllers with control wires and appurtenances will be furnished and installed by the contractor.

Plans and specifications have been completed for the installation of three-light signals with push-button to be operated by pedestrians.

Plans and specifications were prepared for lighting in connection with the proposed underpass at Junipero Serra Boulevard. Sixteen refractor-type flush units with lumen lamps will be mounted symmetrically to give proper illumination on the roadway. On Junipero Serra Boulevard six lighting standards with single pendant luminaires, mounted 25 feet above the highway and equipped with 6000 lumen lamps, will be installed.

Plans and specifications were prepared and supervision provided for the electrical part of the installation. New motor and controls were furnished for 3-phase service to supplement the 2-phase service. Controls for new equipment were properly interlocked to provide safety for the operators. A complete report of the acceptance test was made of the performance for all of the electrical equipment.



Parkmerced  
Pumping  
Station

A report of the series of tests conducted at this new pumping station for all motors and pumps has been completed. (For detailed description of this station see 1943-44 report).

Richmond-  
Sunset  
Sewage  
Treatment  
Plant

Plans and specifications were prepared for: one 20 h.p. sewage pump, to be operated both automatically and manually; two 1 h.p. motor-driven scrapers to be added to the grit-grease removal equipment; and one 10 h.p. motor-driven blower to supplement the present equipment for aeration in the grit and grease removal tanks. Additional circuits and controls for this equipment will be provided to conform with the present installation.

Routine load and efficiency tests were made on all sewage pumps, sludge pumps and other equipment.

Miscel-  
laneous

Engineering services and advice were given on the following:

Proper lighting for several offices in the City Hall.

Operational plan for actuated traffic signals at Hyde and California Streets for the cable cars.

Plans and specifications for a new traffic gate at Islais Creek to replace the old one which had been destroyed by a truck.

AUXILIARY WATER SUPPLY SYSTEM

During the year no additions were made to the sytem.

Plans, specifications, and estimates were prepared for the relocation of hydrants, valves, etc. of the high pressure and domestic water systems, made necessary by street and boulevard improvement.

Corrections were made to the system's records and maps. Various items of information as to location and type of installation were furnished to public utilities and City departments.

At the request of the San Francisco Fire Department an investigation was made of a number of brick cisterns built prior to 1908. Of these, nine were found to have small storage capacity and to be in such dangerous condition that they were abandoned and filled with sand.

Six underground brick cisterns were repaired. The side walls of all cisterns were lined with three inches of gunite, the bottoms of two with two-inch coat of gunite. Also, the dome of one cistern was lined with gunite, thickness varying from two and one-half to three and one-half inches. Wire mesh was placed in all the areas that were gunited. Contract cost, \$13,690.

## TRAFFIC

The Traffic Engineering Section acts in an advisory capacity to the Police Commission in matters pertaining to traffic. Under the City Charter, the Commission has the power to regulate traffic, including the location and use of traffic control devices. This Section supervises traffic striping, the installation and maintenance of signs of all types, and makes plans, reports and recommendations on traffic control systems.

The regular maintenance program of traffic striping and painting school pedestrian lanes was continued throughout the year. Work completed included 232 miles of lane-stripes, pedestrian cross-walks at 1,315 intersections, 4,853 pavement words, 515 safety zones and 179 bus stop zones; 6,800 gallons of white traffic paint were used, and the expenditure for labor and material was \$49,500. Special work included the painting and numbering of 400 stalls in the vicinity of the Civic Center for parking official vehicles during the United Nations Conference and the re-routing of civilian traffic over other streets.

New street signs were installed at 39 locations, 25 of which were at intersections within the Marine Corps Supply Depot south of Islais Creek. The remainder were for replacement of damaged signs.

During the year 79 reflector type "Stop" signs, 200 warning and regulatory, and 253 parking restriction signs were installed; 192 portable "No Parking" signs were purchased for use by the Police Department. The expenditure for signs was \$3,500.

"Stop" and "Go" signals were put in service at the intersections of Bryant and Third Streets, Bryant and Ninth Streets, and Brannan and Sixth Streets. Total cost, \$2,087.

At Third and Sixteenth Streets 3-light signals with "walk and wait" push button control for pedestrians were put into ser-

vice at an expenditure of \$1,871.

On Market Street, from Drumm Street to Van Ness Avenue, 27 safety zones were lengthened to permit the street-cars to stagger stops for loading and unloading passengers. The metal buttons at these zones were removed and replaced by concrete end bars.

Traffic islands with "Stop" signs and curb reflectors were constructed at the intersection of Anza and Stanyan Streets. On the north side of Market Street at Drumm Street the existing island was extended westerly to provide for a double-length safety zone.

Traffic and safety conditions were investigated at 94 locations and improvements made, where warranted, by traffic striping or the installation of regulatory signs. Traffic counts were made at seven locations, speed checks at one.

Sixty new bus stop zones were established and each marked by painted stripes on the pavement. A bus stop sign was installed at each location.

Plans, specifications, and sequence schedules were prepared for the re-routing and control of traffic during construction operations on the following street and sewer projects:

Army St. - Bartlett to Guerrero St.  
 Anza St. - Parker to Masonic Ave.  
 Alemany Blvd. - San Jose Ave. to Junipero Serra Blvd.  
 Clipper St. Extension - Douglass St. to Portola Dr.  
 Bush St. Sewer - Gough to Octavia St.  
 California St. Sewer - Steiner to Pierce St.  
 Folsom St. Sewer - 12th to 14th St.  
 Hampshire St. Sewer - 25th to Army St.  
 LaPlaya Sewer - Lincoln Way to Lawton St.  
 Napoleon St. Sewer - Jerrold Ave. to S.P. Co. R/W  
 Pierce St. Sewer - Pacific Ave. to Jackson St.  
 Pine and Broderick Sts. Sewer - Broderick and Sutter Sts.  
     to California St. and Presidio Ave.  
 Scott St. Sewer - 17th St. and Treat Ave.  
     to Fell and Divisadero Sts.  
 Upper Army St. Sewer - Army St. and San Jose Ave.  
     to 24th and Noe Sts.  
 Vicente St. Outfall Sewer - Pacific Ocean to 45th Ave.

RICHMOND-SUNSET SEWAGE TREATMENT PLANT

Operation and maintenance of the Richmond-Sunset Sewage Treatment Plant continued throughout the fiscal year, the sixth full year of operation. War conditions were again manifested by a considerable turnover of personnel, but no actual manpower shortage was experienced.

During the twelve-month period the total quantity of sewage treated was 2,977.8 million gallons, of which 1,309.3 million gallons were gravity flow from the Richmond District and 1,587.5 million gallons were pumped flow from the Sunset District. This is an increase of 159.1 million gallons over the preceding year. The flow from the Sunset District was by-passed for a period equivalent to 39.8 days because of storm conditions and the flow from the Richmond District was limited to a maximum rate of 18 million gallons per day during storms by diversion at the 24th Avenue and Lake Street control structure and by manual adjustment of stop planks in the inlet channels at the plant. The average daily flow for the year was 9.7 million gallons for actual time of plant operation, an increase of 7 per cent over the preceding year. The average daily treated wet weather flow was 10.5 million gallons and the average daily treated dry weather flow was 8.9 million gallons.

During the year a total of 3,719 cubic feet of screenings, 1,260 cubic yards of grit and 2,858 tons of dry sewage solids were removed from the sewage. The screenings were disposed of by incineration, the grit by hauling to a dump. The sewage solids were digested, elutriated and dewatered by vacuum filtration; the the production of filter cake amounted to a total of 4,050 tons, equivalent to 960 tons of dry solids. The plant delivered 5,199 cubic yards of filter cake, estimated to have a value of \$20,800, to City Parks for use as fertilizer, and 276 cubic yards were

given to the public.

Bacteriological examinations for coliform organisms in the shore waters along the Great Highway, China and Baker's Beaches made by the Department of Public Health during the first half of the year indicated continued satisfactory sanitary conditions. These tests were discontinued during the last half of the year. However, weekly examinations for coliform organisms in the plant effluent were made during the entire year.

The plant was shut down for a limited period during the winter rainy season to replace worn equipment in the grit-grease and elutriation tanks; to remove sand deposits from channels and tanks; and to inspect, adjust and repair all other mechanical equipment underwater.

The bar racks were in continuous operation during Pre-Treatment the year. Repairs consisted of renewing a stator in the east bar rack and replacing wear plates, pins, bushings and cables in both east and west bar racks. Approximately 1.3 cubic feet of screenings were removed per million gallons of sewage treated.

Although there are four grit-grease tanks, only two, Nos. 2 and 3, have been equipped and placed in service. Grease removal was satisfactory, but grit removal was not complete, as in the past, because of excessive flowing-through velocities. A contract for equipping tanks Nos. 1 and 4 to bring the grit-grease removal system to original design capacity was let at the end of the year. During the winter shut-down, scraper chains, shafts, sprockets, and idler gears in Nos. 2 and 3 tanks were replaced and the drive chain tightening sprockets in No. 3 tank were renewed. All diffuser plates were cleaned in place with technical hydrochloric acid followed by dichromate-sulphuric mixture; air diffusion and distribution were thereby improved.

The sand pump was overhauled during the early part of the year and new wearing rings were installed, but in order to overcome operational difficulties from plugging and wear it was replaced with a new dredge-type sand pump with a 10 horse-power motor and variable speed drive. This new pump is interchangeable with the Sunset sump sand pump previously installed; both are giving excellent service.

The hand valves on the suction line from Nos. 2 and 3 grit-grease tanks to the sand pump were replaced by hydraulically-operated valves controlled from the main floor level. In order to operate these valves and, in addition, to eliminate the existing cross-connections between the potable City water supply and the sand pump and grease pump water seals, the hose bibbs for flushing grease sumps, and the water sprays on the grit-grease tanks, a new discharge line was installed to supply pumped plant effluent from the Sedimentation Building. There are no connections between this line and the potable City water supply.

|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sludge<br>Control<br>and<br>Sedimentation | During the winter shut-down approximately 24 cubic yards of sand were removed from the west flocculation tank, 10 cubic yards from the east flocculation tank, 8 cubic yards from the Pre-Treatment Building channels and 10 cubic yards from the inlet channel to the Sedimentation Building. The grease-lubricated bearings with felt seals replacing the water-lubricated bearings, as well as the other equipment installed in the flocculating tanks last year, were examined and found to be in excellent condition. The drive chains were reversed to equalize wear. |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

A larger capacity pump with a  $7\frac{1}{2}$  horse-power motor was installed in the Sedimentation Building to supply sufficient plant effluent for continual operation of the sedimentation tank water spray system and for elimination of some of the existing Pre-Treatment Building and Sludge Control House cross-connections with

the potable City water supply. The cross-connections eliminated in the Pre-Treatment Building have already been enumerated; those eliminated in the Sludge Control House were: flushing water for the thickening tank float wells, raw sludge withdrawal and discharge lines and the gland seals on raw sludge pumps.

Wearing rings were renewed on each of the two sludge pumps four times during the year to maintain good pump performance. Of the eight effluent troughs in the sedimentation tanks, six were given a coat of bituminous paint and two were given a coat of hot asphalt. A broken winch bracket for elevating the scum trough in the west sedimentation tank was repaired by welding.

High removals of suspended solids were again obtained in the sedimentation tanks. The yearly weighted average suspended solids in the raw sewage was 260 ppm\* and in the plant effluent was 65 ppm; this was an overall removal of 75 per cent. The corresponding yearly average 5-day biochemical oxygen demands were 230 and 120 ppm, an overall reduction of 48 per cent.

Chlori- Chlorine for pre-chlorination of the sewage for odor  
nation control was used throughout the year at the rate of 30 pounds per million gallons. Chlorine for disinfection of the plant effluent was used, except during storms or when by-passing the Sunset flow, at a rate varying from 80 to 100 pounds per million gallons to maintain an average residual of 0.5 ppm after a contact period of five minutes. This post-chlorination was very effective in destroying bacteria; the coliform index of the plant effluent was then well below ten coliform organisms per milliliter, the limit set by the State Department of Public Health for beach waters. The bacteriological examinations were made by the Department of Public Health.

Both chlorinators were disassembled, cleaned, adjusted and reassembled, and new water pressure reducing valves were installed

\*parts per million



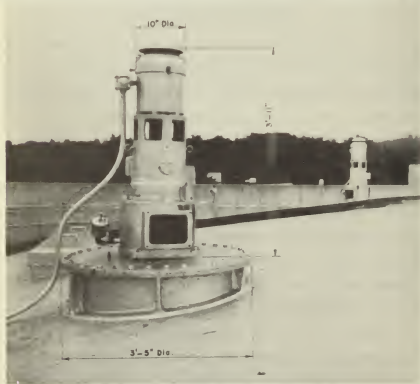


Chlorine Storage Room

during the winter shut-down. The controls which automatically regulate the chlorine feed in proportion to sewage flow operated satisfactorily throughout the year. The pinion shaft, bearings and couplings in the flash mixer were renewed and the Falk coupling on the motor drive shaft replaced.

As in the past, the single digester was greatly over-loaded and practically no stratification could be obtained. Based on a contributing population of 190,000, the available digestion space was approximately 0.8 cubic feet per capita. Nevertheless, the average volatile content of the sludge removed from the digester was 68.1 per cent, which represents a reduction of approximately 60 percent of the volatile matter initially present in the raw sludge pumped to the digester. It was necessary to maintain the inlet water temperature to the heating coils in the digester at 140 F in order to maintain

digester temperature at an average of 85 F. A leaking heat exchanger was removed from the digester and the leak repaired after removing scale from the exterior of the coils. The scale was about one-eighth inch thick and consisted largely of calcium carbonate; the metal surface beneath it was found to be exceptionally free of corrosion. It is very probable that the other three heat exchangers have similar scale incrustations, to which the reduced heat exchange capacity of the system may be attributed. A leaking return line within the digester from the east bank of heat exchangers was blanked off and replaced with a hot water-service rubber hose connected from the end of the exchanger header to the return line outside the digester. A rubber hose was installed from the seeding pump for connection to either of the two digester manhole covers to allow pumping of bottom digested sludge over the top of the scum layer in order to both



Turbo mixers on digester

soften and seed this layer. This procedure helped to a certain extent in inducing better digestion of the scum layer. The seeding pump was completely overhauled and new wearing rings installed.

During the first four months of the year the average metered gas production was only about 0.4 cubic feet per day per capita of connected population because of considerable leakage of gas from the digester seal. On completion of a by-pass gas pipe line from the condensation trap in the boiler room to the gas meters, eliminating a portion of the line which had settled and allowed water to condense and form a trap, leakage of gas at the digester seal was considerably reduced. The metered gas production then rose to 160,000 cubic feet per day, or approximately 0.9 cubic feet per day per capita of connected population.

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Elutriation<br>and<br>Sludge<br>Filtration | All sludge withdrawn from the digester was washed with plant effluent in the elutriation tanks, resulting in an elutriated sludge with an average alkalinity of 450 ppm. This was a reduction of 80 per cent from the average alkalinity of 2280 ppm in the digested sludge. Sand deposits were removed from the elutriation tanks and mixers during the winter shut-down and the badly worn chains and sprockets in the tanks replaced. A wooden stairway and platform was constructed at the south end of the elutriation tanks and walkways were installed over the tanks for safe access to lighting fixtures. The chains and sprockets in the elutriated sludge elevator were renewed and brought into alignment. The cylinders and plungers in the elutriated sludge transfer pump were renewed. |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

The vacuum filter operated satisfactorily throughout the year. The filter cloth was replaced twice during the year; the effective life of each cloth was about 1,000 hours of filter operation. The average ferric chloride dose on dry solids was 5.02 per cent, which is in excellent agreement with the computed value of 5.01 per cent by the equation for computing coagulant require-

ments developed by A. L. Genter, "Proceedings," A.S.C.E., March 1945, page 314. The capacity of the main storage tank for concentrated ferric chloride solution was increased 670 gallons by increasing the height of the tank two feet. The ferric chloride pump gland assembly was renewed and a heating lamp installed to prevent condensation in the motor. An air-operated liquid level gauge was installed in the vacuum filter room for indicating the depth of ferric chloride solution in the main storage tank.

Sunset  
Pumping  
Plant      Except for storm periods and during the winter shut-down the pumping plant was in continuous operation.

The sump was periodically pumped down and flushed to prevent accumulation of deposits. Two shaft bearing brackets were renewed in the sump sand scraping mechanism.

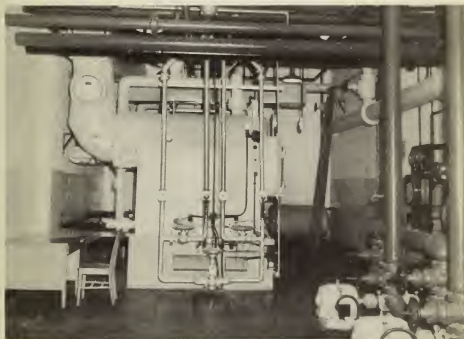
A contract was entered into at the end of the year to furnish and install a new 1,000 gpm sewage pump with a 20 horsepower motor and accessory piping. The leather face on the check valve for No. 1 sewage pump was replaced. A new 15 horsepower constant speed motor was installed on the sand pump and the 10 horsepower motor with variable speed drive was moved to the Pre-Treatment Building to operate the new sand pump. The spare sand pump was completely overhauled. The crank-shaft on the Sunset sand washer was straightened.

Labora-  
tory      About 9,000 routine and special analyses were made in the laboratory during the year. Daily determinations included solids and volatile contents of raw, digested and elutriated sludges; solids content of filter cake; pH of digested sludge and filter cake; alkalinities of digested and elutriated sludges; suspended solids, alkalinities and chlorides of raw sewage and plant effluent on 24-hour composites; digester gas densities; and assay of ferric chloride solutions used for sludge filtration. Five-day biochemical oxygen demands were determined bi-weekly on 24-hour composites of raw sewage and plant effluent.

In addition to this routine work, special studies were made to secure design data for the Bureau of Engineering, and research was done toward improvement of methods of laboratory analysis. The laboratory again demonstrated its great usefulness in the efficient control of plant operation.

The following painting was done during the year:

|               |                                                                  |
|---------------|------------------------------------------------------------------|
| Miscellaneous | metal window frames and some interior piping in the              |
|               | Pre-Treatment Building, interior piping and equipment            |
|               | and one coat of aluminum paint to the interior wood surfaces of  |
|               | the Mixing and Sedimentation Building, and the metal cover and   |
|               | exterior piping of the digester. Thirty-five broken window panes |
|               | in the Pre-Treatment and Main Buildings were replaced.           |



Boiler room - Main Bldg.

In the Main Building additional shelving and lockers were constructed in the main storeroom. All  $5/8$ -inch U-bolts in the filter cake and sand storage bins were replaced with  $7/8$ -inch U-bolts; the hoist for No. 5 bin was overhauled and hinge bolts in

No. 1 bin were renewed. Feed lines for chemical treatment and sampling lines for testing the contents were installed on the boilers. A new two-stage air compressor capable of developing a rated pressure of 150 psi, driven by a 5 horse-power motor, was installed in the Main Building to furnish a needed reserve of compressed air for controls and for operating the hoist on the Sunset diversion gate. An automatic rain gauge was installed on the roof of the building. A mechanical convection drying oven was purchased for the laboratory.

Operating data for the fiscal year are summarized in tables 1 to 4.

RICHMOND-SUNSET SEWAGE TREATMENT PLANT  
COST OF OPERATION

| <u>Item of Expenditure</u> | <u>Total Plant Operation</u> | <u>Sewage Treatment with Chlorination</u> | <u>Sunset Pumping Plant</u> | <u>Sludge Disposal Conditioning &amp; Filtration</u> | <u>Sewage Treatment without Chlorination</u> |
|----------------------------|------------------------------|-------------------------------------------|-----------------------------|------------------------------------------------------|----------------------------------------------|
| Permanent Salaries         | \$ 45,048                    | \$ 29,858                                 | \$ 5,756                    | \$ 9,434                                             | \$ 27,064                                    |
| Overtime                   | 396                          | 135                                       | 31                          | 230                                                  | 91                                           |
| Temporary Salaries         | 2,096                        | 1,354                                     | 198                         | 544                                                  | 1,222                                        |
| Wages                      | 6,210                        | 3,164                                     | 754                         | 2,292                                                | 2,815                                        |
| Contractual Services       | 5,143                        | 3,770                                     | 467                         | 906                                                  | 3,689                                        |
| Heat, Light & Power        | 10,056                       | 4,585                                     | 5,045                       | 626                                                  | 4,002                                        |
| Material & Supplies        | 20,087*                      | 15,768                                    | 532                         | 3,787                                                | 3,708                                        |
| Totals                     | \$89,036                     | \$58,434                                  | \$12,783                    | \$17,819                                             | \$42,592                                     |

\*Estimated

Richmond Flow (gravity) 1,390 MG  
Sunset Flow (pumped) 1,588 "  
Total 2,978 "

Cost of Operation per MG \$29.90 \$19.62 \$4.29 \$5.99 \$14.30

Estimated cost per capita  
(based on 190,000 population) \$0.47 per yr

5,199 cu.yds. of fertilizer, estimated value \$20,800 delivered to City Parks during year

Additional Expenditures

Plant Improvements \$2,456  
Painting 2,273  
Office Engineering 1,984  
New Equipment 1,838  
\$8,551

The Sunset Pumping Plant was shut down during storms to prevent overflow from the storm sewers, and to avoid handling excessive quantities of sand in the sump.

# RICHMOND-SUNSET SEWAGE TREATMENT PLANT

## TABLE 1 - SEWAGE TREATMENT DATA

| Month        | Flow - MG           |                  | Days By-Passed<br>Rich-<br>mond | Sun-<br>set | Rain<br>Inches | *Suspended Solids, ppm |              | 5-Day BOD, ppm |              |
|--------------|---------------------|------------------|---------------------------------|-------------|----------------|------------------------|--------------|----------------|--------------|
|              | Gravity<br>Richmond | Pumped<br>Sunset |                                 |             |                | Raw                    | Plant<br>Eff | Raw            | Plant<br>Eff |
| July 1944    | 114.3               | 163.1            |                                 |             |                | 295                    | 65           | 255            | 120          |
| Aug          | 116.2               | 151.8            |                                 |             |                | 305                    | 63           | 260            | 115          |
| Sept         | 116.8               | 153.7            |                                 |             |                | 300                    | 65           | 245            | 110          |
| Oct          | 122.7               | 146.0            |                                 |             |                | 285                    | 69           | 255            | 115          |
| Nov          | 136.7               | 116.4            | .02                             | 2.83        | 1.53           | 230                    | 72           | 225            | 125          |
| Dec          | 138.5               | 104.4            |                                 |             | 6.10           | 235                    | 73           | 230            | 140          |
| Jan 1945     | 74.3                | 91.6             | 11.60                           | 15.19       | 4.69           | 280                    | 79           | 270            | 170          |
| Feb          | 32.0                | 30.9             | 20.56                           | 23.00       | 3.79           | 245                    | 67           | 210            | 155          |
| Mar          | 156.4               | 134.1            |                                 |             | 3.90           | 185                    | 59           | 155            | 100          |
| Apr          | 125.9               | 175.0            |                                 |             | .39            | 275                    | 63           | 175            | 95           |
| May          | 133.0               | 157.1            |                                 |             | .66            | 230                    | 53           | 220            | 125          |
| June         | 123.5               | 163.4            |                                 |             | .04            | 250                    | 57           | 270            | 140          |
| Totals       | 1390.3              | 1587.5           | 32.18                           | 78.03       | 22.50          | 260                    | 65           | 230            | 120          |
| Weighted Avg |                     |                  |                                 |             |                |                        |              |                | 48           |

By-passing - Richmond, 32.18 days, shut down for plant overhaul  
 - Sunset, 38.19 days, plant overhaul and repairs;  
 39.84 days, rain

\*By modification of Chicago Sanitary District-filter paper method.



# RICHMOND-SUNSET SEWAGE TREATMENT PLANT

TABLE 1 - SEWAGE TREATMENT DATA (Cont'd)

| Month        | Alk as CaCO <sub>3</sub> , ppm |           | Chlorides, ppm |           | Sewage Temp Of | (a) Screenings, Cu Ft |        | (b) Grease, Gallons Pumped |      | Sand, Cu Yd |         | Chlorination, lbs |      |
|--------------|--------------------------------|-----------|----------------|-----------|----------------|-----------------------|--------|----------------------------|------|-------------|---------|-------------------|------|
|              | Raw                            | Plant Eff | Raw            | Plant Eff |                |                       |        |                            |      | Pre-Treat   | Sun-set | Pre               | Post |
| July 1944    |                                |           |                |           | 68             | 308                   | 27900  | 16                         | 25   | 8420        | 22120   |                   |      |
| Aug          |                                |           |                |           | 69             | 320                   | 27900  | 22                         | 25   | 7820        | 21270   |                   |      |
| Sept         | 225                            | 220       | 59             | 63        | 70             | 377                   | 27000  | 29                         | 25   | 7980        | 22400   |                   |      |
| Oct          | 220                            | 210       | 67             | 73        | 69             | 365                   | 27900  | 60                         | 37   | 8400        | 22030   |                   |      |
| Nov          | 175                            | 165       | 66             | 72        | 67             | 348                   | 27000  | 129                        | 81   | 8090        | 15550   |                   |      |
| Dec          | 200                            | 180       | 85             | 95        | 61             | 377                   | 27900  | 147                        | 32   | 8650        | 13980   |                   |      |
| Jan 1945     | 220                            | 200       | 74             | 82        | 58             | 240                   | 16700  | 106                        | 28   | 5570        | 12630   |                   |      |
| Feb          | 225                            | 220       | 73             | 79        | 59             | 90                    | 5700   | 28                         | 40   | 2140        | 2170    |                   |      |
| Mar          | 190                            | 180       | 70             | 82        | 58             | 324                   | 27900  | 79                         | 93   | 10290       | 18470   |                   |      |
| Apr          | 225                            | 210       | 81             | 87        | 64             | 327                   | 27000  | 43                         | 66   | 9850        | 23360   |                   |      |
| May          | 210                            | 195       | 71             | 76        | 65             | 334                   | 27900  | 43                         | 44   | 7930        | 21910   |                   |      |
| June         | 230                            | 215       | 71             | 74        | 62             | 302                   | 27000  | 30                         | 32   | 8130        | 23440   |                   |      |
| Totals       |                                |           | 73             | 80        | 65             | 3719                  | 297800 | 732                        | 528' | 93270       | 219330  |                   |      |
| Weighted Avg | 210                            | 195       |                |           |                |                       |        |                            |      |             |         |                   |      |

(a) Removed by Pre-Treatment bar racks only; screenings from Sunset sump not included.

(b) Approximate removals from grit-grease tanks; additional removals in Mixing and Sedimentation Building not included.

Pre-Chlorination - 30 lbs per MG  
 Post-Chlorination - 9 AM - 6 PM 100 lbs per MG  
                               6 PM - 9 AM 80 " " "  
 No post-chlorination when Sunset flow by-passed.

RICHMOND-SUNSET SEWAGE TREATMENT PLANT

TABLE 2 - SLUDGE TO DIGESTER AND GAS PRODUCTION

| Month        | Gallons    | Raw Sludge to Digester |                    |      | Lbs<br>Volatile | Lbs<br>Volatile | Metered Gas Production |            | Digester<br>Temp °F |
|--------------|------------|------------------------|--------------------|------|-----------------|-----------------|------------------------|------------|---------------------|
|              |            | Total<br>Solids        | Lbs. Dry<br>Solids | %    |                 |                 | To Boilers             | To Waste   |                     |
| July 1944    | 1,494,900  | 4.50                   | 564,500            | 84.8 | 478,800         | 1,845,100       | 703,700                | 2,548,800  | 90                  |
| Aug          | 1,578,800  | 4.38                   | 580,600            | 83.1 | 482,600         | 1,741,100       | 705,600                | 2,446,700  | 90                  |
| Sept.        | 1,759,500  | 4.52                   | 667,200            | 82.1 | 547,500         | 1,495,200       | 693,300                | 2,188,500  | 88                  |
| Oct          | 1,654,400  | 4.43                   | 615,700            | 83.3 | 513,000         | 1,403,200       | 522,400                | 1,925,600  | 81                  |
| Nov          | 1,056,500  | 4.19                   | 371,800            | 85.4 | 317,400         | 1,216,400       | 1,144,000              | 2,360,400  | 80                  |
| Dec          | 1,034,700  | 4.27                   | 371,200            | 85.9 | 318,800         | 1,532,600       | 2,446,100              | 3,978,700  | 82                  |
| Jan 1945     | 819,400    | 4.45                   | 306,300            | 85.9 | 263,000         | 1,277,900       | 1,438,700              | 2,716,600  | 85                  |
| Feb          | 252,000    | 4.14                   | 87,700             | 84.7 | 74,300          | 432,300         | 147,200                | 579,500    | 94                  |
| Mar          | 1,148,100  | 4.14                   | 399,400            | 85.3 | 340,500         | 1,630,000       | 2,035,600              | 3,665,600  | 85                  |
| Apr          | 1,522,000  | 4.23                   | 540,600            | 84.9 | 458,700         | 1,548,000       | 2,523,500              | 4,071,500  | 82                  |
| May          | 1,597,800  | 4.19                   | 562,800            | 84.7 | 476,600         | 1,641,700       | 2,561,400              | 4,203,100  | 83                  |
| June         | 1,798,900  | 4.29                   | 648,700            | 82.7 | 536,400         | 1,605,400       | 3,214,000              | 4,819,400  | 83                  |
| Total        | 15,717,000 |                        | 5,716,500          | 84.1 | 4,807,600       | 17,368,900      | 18,135,500             | 35,504,400 |                     |
| Weighted Avg |            | 4.33                   |                    |      |                 |                 |                        |            | 85                  |

\*Gas leakage at digester seals not accounted for; leakage greatly diminished after completion of alterations to digester gas line on November 16, 1944.

# RICHMOND-SUNSET SEWAGE TREATMENT PLANT

TABLE 3 - DIGESTED SLUDGE TO ELUTRIATION TANKS

| Month        | Sludge, thousands of gallons |        |                    | Avg<br>%,<br>Solids | Lbs<br>Dry<br>Solids | Avg<br>%,<br>Volatile | Lbs<br>Volatile | Avg Alk as<br>CaCO <sub>3</sub> , ppm | Sol To<br>Elut<br>Sol To<br>Dig |
|--------------|------------------------------|--------|--------------------|---------------------|----------------------|-----------------------|-----------------|---------------------------------------|---------------------------------|
|              | From Digester<br>Sup'n't     | Bottom | Elut Ret<br>To Dig |                     |                      |                       |                 |                                       |                                 |
| July 1944    | 1814.0                       | 130.9  |                    | 1.41                | 228,400              | 69.3                  | 158,400         | 2460                                  | .40                             |
| Aug          | 2014.4                       | 12.6   |                    | 1.55                | 261,100              | 68.8                  | 179,700         | 2480                                  | .45                             |
| Sept         | 2022.6                       | 25.3   | 36.3               | 1.90                | 316,400              | 67.4                  | 213,700         | 2460                                  | .47                             |
| Oct          | 1507.1                       | 317.6  | 28.2               | 1.82                | 272,400              | 67.1                  | 182,800         | 2280                                  | .44                             |
| Nov          | 586.8                        | 578.7  |                    | 1.72                | 167,100              | 66.9                  | 111,700         | 2040                                  | .45                             |
| Dec          | 653.7                        | 466.4  |                    | 1.68                | 156,900              | 69.8                  | 109,400         | 2200                                  | .42                             |
| Jan 1945     | 855.8                        | 51.4   | 33.8               | 1.26                | 91,700               | 69.8                  | 64,000          | 2280                                  | .30                             |
| Feb          | 221.6                        | 84.3   |                    | 1.92                | 48,900               | 66.5                  | 32,500          | 2320                                  | .56                             |
| Mar          | 1117.0                       | 187.1  |                    | 1.43                | 155,600              | 67.4                  | 104,900         | 2200                                  | .39                             |
| Apr          | 1547.4                       | 213.1  |                    | 1.69                | 248,700              | 67.5                  | 167,900         | 2140                                  | .46                             |
| May          | 1455.7                       | 368.8  | 31.7               | 1.72                | 254,400              | 68.0                  | 172,900         | 2200                                  | .45                             |
| June         | 2229.7                       | 78.5   | 226.0              | 1.86                | 322,800              | 68.6                  | 221,600         | 2200                                  | .50                             |
| Totals       | 16005.8                      | 2514.7 | 356.0              | 1.67                | 2,524,400            | 68.1                  | 1,719,500       | 2280                                  | .44                             |
| Weighted Avg |                              |        |                    |                     |                      |                       |                 |                                       |                                 |

RICHMOND-SUNSET SEWAGE TREATMENT PLANT

TABLE 4 - VACUUM FILTER OPERATION

| Month        | M<br>Gallons | Solids<br>% | Elutriated Sludge Filtered |                |                    |              | Alk as<br>CaCO <sub>3</sub> , ppm |
|--------------|--------------|-------------|----------------------------|----------------|--------------------|--------------|-----------------------------------|
|              |              |             | Solids<br>M Lbs            | Volatiles<br>% | Volatiles<br>M Lbs | Ash<br>M Lbs |                                   |
| July 1944    | 693.0        | 3.01        | 175.8                      | 69.8           | 122.9              | 52.9         | 455                               |
| Aug          | 814.1        | 3.07        | 210.7                      | 69.0           | 145.3              | 65.4         | 485                               |
| Sept         | 629.9        | 3.44        | 182.9                      | 66.8           | 122.3              | 60.6         | 505                               |
| Oct          | 955.1        | 3.07        | 247.0                      | 68.0           | 167.9              | 79.1         | 465                               |
| Nov          | 507.2        | 3.30        | 141.8                      | 68.0           | 96.4               | 45.4         | 390                               |
| Dec          | 413.7        | 3.63        | 126.8                      | 71.2           | 90.3               | 36.5         | 425                               |
| Jan 1945     | 264.4        | 3.57        | 79.9                       | 70.6           | 56.4               | 23.5         | 445                               |
| Feb          | 103.0        | 3.72        | 32.3                       | 68.8           | 22.2               | 10.1         | 460                               |
| Mar          | 477.9        | 3.77        | 152.2                      | 68.8           | 104.8              | 47.4         | 420                               |
| Apr          | 640.0        | 3.46        | 187.3                      | 69.6           | 130.2              | 57.1         | 420                               |
| May          | 757.1        | 3.25        | 207.7                      | 69.8           | 144.9              | 62.8         | 445                               |
| June         | 672.3        | 3.09        | 174.6                      | 69.9           | 122.0              | 52.6         | 465                               |
| Totals       | 6,927.7      |             | 1,919.0                    |                | 1,325.6            | 593.4        |                                   |
| Weighted Avg |              | 3.28        |                            | 69.1           |                    | 2.23         | 450                               |

RICHMOND-SUNSET SEWAGE TREATMENT PLANT

TABLE 4 - VACUUM FILTER OPERATION (Cont'd)

| Month        | Lbs<br>FeCl <sub>3</sub> | % FeCl <sub>3</sub><br>Solids | Hours<br>Filter<br>Operated | Lbs<br>Solids<br>Per Hr | Lbs Solids<br>Per Sq Ft<br>Filter | Filter<br>Cake<br>% Water | Gallons<br>Sludge<br>Filtered<br>Per Hr | Filter-<br>trate<br>M Lbs<br>Per Hr | Filter<br>Cake<br>Cu Yds |
|--------------|--------------------------|-------------------------------|-----------------------------|-------------------------|-----------------------------------|---------------------------|-----------------------------------------|-------------------------------------|--------------------------|
| July 1944    | 9910                     | 5.64                          | 187.25                      | 970                     | 4.85                              | 75.6                      | 3700                                    | 27.2                                | 496                      |
| Aug          | 11770                    | 5.58                          | 221.89                      | 990                     | 4.95                              | 76.5                      | 3670                                    | 26.8                                | 576                      |
| Sept         | 10880                    | 5.25                          | 170.85                      | 1110                    | 5.55                              | 76.4                      | 3680                                    | 26.4                                | 516                      |
| Oct          | 11970                    | 4.84                          | 245.75                      | 1040                    | 5.20                              | 74.2                      | 3890                                    | 28.8                                | 630                      |
| Nov          | 5750                     | 4.06                          | 129.79                      | 1120                    | 5.60                              | 73.2                      | 3910                                    | 28.8                                | 390                      |
| Dec          | 3720                     | 2.94                          | 107.04                      | 1210                    | 6.05                              | 74.6                      | 3860                                    | 27.9                                | 348                      |
| Jan          | 3180                     | 3.98                          | 69.85                       | 1170                    | 5.85                              | 76.3                      | 3780                                    | 27.0                                | 232                      |
| Feb          | 1890                     | 5.86                          | 31.35                       | 1070                    | 5.35                              | 76.9                      | 3280                                    | 23.0                                | 94                       |
| Mar          | 7890                     | 5.18                          | 145.79                      | 1080                    | 5.40                              | 77.0                      | 3270                                    | 22.9                                | 492                      |
| Apr          | 8780                     | 4.68                          | 182.88                      | 1060                    | 5.30                              | 76.3                      | 3500                                    | 25.1                                | 582                      |
| May          | 10770                    | 5.18                          | 217.61                      | 990                     | 4.95                              | 75.6                      | 3470                                    | 25.2                                | 583                      |
| June         | 9850                     | 5.64                          | 192.81                      | 940                     | 4.70                              | 74.7                      | 3480                                    | 25.5                                | 536                      |
| Totals       | 96360                    | *5.02                         | 1902.86                     | 1040                    | 5.20                              | 75.6                      | 3640                                    | 26.4                                | **5475                   |
| Weighted Avg |                          |                               |                             |                         |                                   |                           |                                         |                                     |                          |

\*Computed value 5.01% from Equation by A. L. Genter,  
"Proceedings" - Am. Soc. C. E., March, 1945, page 314

\*\*5199 cu yd to City Parks  
276 " " " Public

## SEWAGE PUMPING STATIONS

An electrical engineering inspector is responsible for the maintenance and operation of all pumping stations, as well as supervision of the personnel. Marina, Commercial Street, Seaciff #2, and Parkmerced Stations are in charge of an attendant during the daytime and operate automatically during the night. Four other stations -- Fitzgerald, Seaciff #1, Pinelake and Vicente -- are fully automatic and operate without an attendant, the maintenance work being performed, or arranged for, by the electrical engineering inspector.

### Marina Sewage Pumping Station

From January 29 to February 19, 1945, all flow was bypassed while the sump room was being water-proofed and painted. The painting program included the following:

- Steam cleaning and painting of walls and floor of sump room, float chambers, etc.;
- Painting walls, ceiling and floor of main control room, fan room, walls and ceiling of pump room;
- Scraping and painting of water piping in sump room, seal water and pressure tanks;
- Sealing and water-proofing of leaks in the sump room walls.

The trench sump pump was overhauled and the flow meter and telemeter were serviced and recalibrated. New pressure gages were installed on the seal water system and on some of the pump discharge lines. New canvas sections were placed in the air ducts on both the suction and discharge of the fans to reduce noise. A new seal water pump and motor of larger capacity has replaced the old one which was inadequate to serve all the pumps. Routine maintenance included the repacking of all pumps three times during the year, repacking of regulatory and emergency valves and servicing meters and instruments.

To prevent possible flooding of the station by a failure in either the electrical power or in the water supply system, or

both, the 30-inch emergency shutoff valve, which operates automatically by the pneumatic system, has been arranged for manual emergency operation. A special hatch with a sidewalk door was built for an entrance from the outside of the station into the valve pit, and a platform was placed in this pit to operate a hand force pump which is used to close the 30-inch valve.

#### Commercial Street Sewage Pumping Station

A new 1000 GPM gasoline engine-driven pump was installed and is in use for emergency standby service. This was considered desirable as the station has no overflow facilities. In the event of power failure or other emergency, this unit can be quickly started and will handle all normal flow.

A new ventilating system including ducts and ventilating fan with automatic control now replaces the old one.

The old chain hoist was discarded, and a new one-ton electric hoist was installed for handling the screenings basket. New floatless controls replaced the obsolete ones. Miscellaneous repairs included building up the cement floor around pump #1, enlarging the auxiliary sump, weather stripping doors, painting the equipment, and repacking pumps.

#### Vicente Sewage Pumping Station

The following alterations and improvements were made during the past year. A new gate valve was put on the discharge line to isolate the header piping in order that the gate and check valves to the individual pumps can be conveniently serviced from time to time. The surge tank was moved to the rear end of the header.

A new gate valve was put in the inlet line leading to the sump in order to by-pass the station while cleaning the sump or

making emergency repairs. A new combination float control has replaced the old floats which had become obsolete. The station was shut down for three weeks for the removal of large sand deposits in the sump and to install new gate valves on both inlet and discharge lines.

#### Sea Cliff Sewage Pumping Station #2

Between January 27 and February 21, 1945, all pumps were shut down while the Richmond sewer tunnel was being cleaned.

Maintenance work included painting the equipment, the building trim, and surrounding fence. Sewage and seal water pumps were repacked, and the flow meter was completely overhauled and recalibrated.

#### Parkmerced Sewage Pumping Station

An electric unit heater with control was installed in the control room to keep the equipment dry. Shelving and a locker were built for the storage of supplies. A venturi tube and meter for measuring and recording the sewage flow has been placed in service.

Normal maintenance included repacking pumps and painting some of the equipment.



MARINA SEWAGE PUMPING STATION

CONTRIBUTING POPULATION - 63,000

DISTRICT AREA - 1,025 ACRES

PUMPAGE IN MILLION GALLONS:

| PUMPAGE IN MILLION GALLONS: |                 |                        |                 |              | Power Consumed by Pumps   | Net Operating Head at Pump. | Million Foot Gallons | K. W. H. per Million Gallons |
|-----------------------------|-----------------|------------------------|-----------------|--------------|---------------------------|-----------------------------|----------------------|------------------------------|
| Month                       | Total per Month | Daily average          | Max. per day    | Min. per day | by Pumps K. W. H. per Mo. | Feet                        | per Month            | per foot Gallons             |
| July 1944                   | 142.6           | 4.600                  | 4.625           | 3.861        | 27,240                    | 41.5                        | 5,918                | 4.60                         |
| Aug                         | 138.8           | 4.477                  | 4.613           | 4.160        | 26,510                    |                             | 5,776                | 4.60                         |
| Sept                        | 135.4           | 4.513                  | 5.110           | 3.464        | 25,860                    |                             | 5,619                | 4.60                         |
| Oct                         | 129.9           | 4.190                  | 8.824           | 3.458        | 24,810                    |                             | 5,391                | 4.60                         |
| Nov                         | 146.0           | 4.867                  | 9.061           | 3.744        | 27,880                    |                             | 6,059                | 4.60                         |
| Dec                         | 149.5           | 4.823                  | 9.302           | 3.685        | 28,550                    |                             | 6,204                | 4.60                         |
| Jan 1945                    | 110.2           | 3.555                  | 5.249           | 3.376        | 21,050                    |                             | 4,573                | 4.60                         |
| Feb                         | 25.5            | No pumping for 19 days |                 |              | 4,860                     |                             | 1,058                | 4.60                         |
| Mar                         | 121.8           | 3.929                  | 7.927           | 3.482        | 23,260                    |                             | 5,055                | 4.60                         |
| Apr                         | 101.6           | 3.387                  | 5.280           | 2.664        | 19,390                    |                             | 4,216                | 4.60                         |
| May                         | 108.7           | 3.506                  | 4.951           | 2.715        | 20,760                    |                             | 4,511                | 4.60                         |
| June                        | 102.3           | 3.410                  | 4.252           | 2.679        | 19,540                    |                             | 4,245                | 4.60                         |
| Total                       |                 |                        |                 |              |                           |                             |                      |                              |
| Per Year                    | 1,412.3         | 4.114                  | (Daily Average) |              | 269,710                   | \$4,045.65                  | 58,625               | 4.60 (Avg)                   |

68% Average overall efficiency of each pump and its motor.

Note: A portion of sanitary flow was by-passed during April, May and June.

COMMERCIAL STREET SEWAGE PUMPING STATION

CONTRIBUTING POPULATION - 14,000 (Estimated)

DISTRICT AREA - 92.5 ACRES

PUMPAGE IN MILLION GALLONS:

| <u>Month</u> | <u>Total</u><br><u>per</u><br><u>Month</u> | <u>Daily</u><br><u>aver-</u><br><u>age</u> | <u>Max.</u><br><u>per</u><br><u>day</u> | <u>Min.</u><br><u>per</u><br><u>day</u> | <u>Power</u><br><u>Consumed</u><br><u>by Pumps</u><br><u>K. W. H.</u><br><u>per Mo.</u> | <u>Power</u><br><u>Consumed</u><br><u>by Pumps</u><br><u>cost</u><br><u>per Mo.</u> | <u>Net</u><br><u>Operating</u><br><u>Head at</u><br><u>Pump.</u><br><u>Feet</u> | <u>Million</u><br><u>Foot</u><br><u>Gallons</u><br><u>per</u><br><u>Month</u> | <u>K. W. H.</u><br><u>per</u><br><u>foot</u><br><u>Gallons</u> |
|--------------|--------------------------------------------|--------------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------|
| July 1944    | 29.39                                      | .948                                       | 1.16                                    | .92                                     | 4,227                                                                                   | 84.54                                                                               | 20                                                                              | 587.8                                                                         | 7.19                                                           |
| Aug          | 32.20                                      | 1.039                                      | 1.25                                    | .83                                     | 4,631                                                                                   | 92.62                                                                               |                                                                                 | 644.1                                                                         | 7.19                                                           |
| Sept         | 30.90                                      | 1.030                                      | 1.32                                    | .93                                     | 4,444                                                                                   | 88.88                                                                               |                                                                                 | 618.1                                                                         | 7.19                                                           |
| Oct          | 31.50                                      | 1.016                                      | 1.50                                    | .97                                     | 4,530                                                                                   | 90.60                                                                               |                                                                                 | 630.0                                                                         | 7.19                                                           |
| Nov          | 31.10                                      | 1.037                                      | 1.36                                    | .97                                     | 4,472                                                                                   | 89.44                                                                               |                                                                                 | 622.0                                                                         | 7.19                                                           |
| Dec          | 32.00                                      | 1.032                                      | 1.45                                    | .92                                     | 4,602                                                                                   | 92.04                                                                               |                                                                                 | 640.0                                                                         | 7.19                                                           |
| Jan 1945     | 33.25                                      | 1.073                                      | 1.50                                    | .83                                     | 4,782                                                                                   | 95.64                                                                               |                                                                                 | 665.0                                                                         | 7.19                                                           |
| Feb          | 29.10                                      | 1.039                                      | 1.65                                    | .89                                     | 4,185                                                                                   | 83.70                                                                               |                                                                                 | 582.0                                                                         | 7.19                                                           |
| Mar          | 30.60                                      | .987                                       | 1.21                                    | .91                                     | 4,401                                                                                   | 88.02                                                                               |                                                                                 | 612.0                                                                         | 7.19                                                           |
| Apr          | 34.30                                      | 1.143                                      | 1.32                                    | 1.07                                    | 4,933                                                                                   | 98.66                                                                               |                                                                                 | 686.0                                                                         | 7.19                                                           |
| May          | 37.70                                      | 1.216                                      | 1.64                                    | .88                                     | 5,422                                                                                   | 108.44                                                                              |                                                                                 | 754.0                                                                         | 7.19                                                           |
| June         | 35.50                                      | 1.183                                      | 1.46                                    | 1.02                                    | 5,105                                                                                   | 102.10                                                                              |                                                                                 | 710.0                                                                         | 7.19                                                           |
| <u>Total</u> |                                            |                                            |                                         |                                         |                                                                                         |                                                                                     |                                                                                 |                                                                               |                                                                |
| Per Year     | 387.54                                     | 1.062                                      | (Daily<br>Average)                      |                                         | 55,734                                                                                  | \$1,114.68                                                                          |                                                                                 | 7,751.0                                                                       | 7.19 (Avg)                                                     |

44% Average overall efficiency of each pump and its motor.

VICENTE SEWAGE PUMPING STATION

CONTRIBUTING POPULATION - 1,900 (Estimated)

DISTRICT AREA - 51.4 ACRES

| <u>PUMPAGE IN MILLION GALLONS:</u> |                 |                       |                 | Power Consumed by Pumps K. W. H. per Mo. | Power Consumed by Pumps cost per Mo. | Net Operating Head at Pump. Feet. | Million Foot Gallons per Month | K. W. H. per Million foot Gallons |
|------------------------------------|-----------------|-----------------------|-----------------|------------------------------------------|--------------------------------------|-----------------------------------|--------------------------------|-----------------------------------|
| Month                              | Total per Month | Daily average         | Max. per day    | Min. per day                             |                                      |                                   |                                |                                   |
| July 1944                          | 3.57            | .115                  | .119            | .097                                     | 1,320                                | 56                                | 199.9                          | 6.60                              |
| Aug                                | 4.22            | .136                  | .173            | .113                                     | 1,559                                |                                   | 236.3                          | 6.60                              |
| Sept                               | 4.99            | .166                  | .168            | .108                                     | 1,845                                |                                   | 279.4                          | 6.60                              |
| Oct                                | 4.27            | .138                  | .168            | .097                                     | 1,578                                |                                   | 239.1                          | 6.60                              |
| Nov                                | 4.17            | .139                  | .210            | .103                                     | 1,539                                |                                   | 233.5                          | 6.59                              |
| Dec                                | 4.20            | .135                  | .157            | .103                                     | 1,552                                |                                   | 235.2                          | 6.60                              |
| Jan 1945                           | 4.46            | .144                  | .215            | .113                                     | 1,647                                |                                   | 249.8                          | 6.59                              |
| Feb                                | 7.10            | Storm & Sanitary Flow |                 |                                          | 2,623                                |                                   | 397.6                          | 6.60                              |
| Mar                                | 9.91            | "                     | "               | "                                        | 3,659                                |                                   | 555.0                          | 6.59                              |
| Apr                                | 4.65            | .155                  | .195            | .129                                     | 1,718                                |                                   | 260.4                          | 6.60                              |
| May                                | 4.63            | .149                  | .200            | .103                                     | 1,711                                |                                   | 259.3                          | 6.60                              |
| June                               | 4.06            | .135                  | .238            | .097                                     | 1,501                                |                                   | 227.4                          | 6.60                              |
| Total Per Year                     | 60.23           | .141*                 | (Daily Average) |                                          | 22,252                               |                                   | 3,373                          | 6.60 (Avg)                        |
|                                    |                 |                       |                 |                                          | \$445.04                             |                                   |                                |                                   |

47% Average overall efficiency of each pump and its motor.

\*Months of February and March are not included.

# SEACLIFF SEWAGE PUMPING STATION NO. 2

CONTRIBUTING POPULATION - 2,400

DISTRICT AREA - 83.4 ACRES

## PUMPAGE IN MILLION GALLONS:

| Month          | PUMPAGE IN MILLION GALLONS: |                        |              | Power Consumed by Pumps |                  | Net Operating Head at Pump. | Million Foot Gallons per Month | K. W. H. per Million Foot Gallons |
|----------------|-----------------------------|------------------------|--------------|-------------------------|------------------|-----------------------------|--------------------------------|-----------------------------------|
|                | Total per Month             | Daily average          | Max. per day | Min. per day            | K. W. H. per Mo. |                             |                                |                                   |
| July 1944      | 3.35                        | .108                   | .150         | .102                    | 1,774.1          | 100.0                       | 335.0                          | 5.30                              |
| Aug            | 3.48                        | .112                   | .198         | .107                    | 1,845.5          |                             | 348.0                          | 5.30                              |
| Sept           | 3.40                        | .113                   | .537         | .108                    | 1,804.2          |                             | 340.0                          | 5.31                              |
| Oct            | 4.98                        | .161                   | .340         | .077                    | 2,636.9          |                             | 498.0                          | 5.30                              |
| Nov            | 4.57                        | .152                   | .411         | .070                    | 2,419.3          |                             | 457.0                          | 5.29                              |
| Dec            | 4.33                        | .140                   | .465         | .082                    | 2,295.8          |                             | 433.0                          | 5.30                              |
| Jan 1945       | 3.08                        | .099                   | .193         | .052                    | 1,628.0          |                             | 308.0                          | 5.29                              |
| Feb            | .88                         | No pumping for 25 days |              |                         | 468.3            |                             | 88.0                           | 5.32                              |
| Mar            | 5.40                        | .174                   | .163         | .057                    | 2,864.5          |                             | 540.0                          | 5.30                              |
| Apr            | 4.28                        | .143                   | .344         | .127                    | 2,270.3          |                             | 428.0                          | 5.30                              |
| May            | 4.14                        | .134                   | .234         | .096                    | 2,194.4          |                             | 414.0                          | 5.30                              |
| June           | 3.91                        | .130                   | .170         | .125                    | 2,073.2          |                             | 391.0                          | 5.30                              |
| Total Per Year | 45.80                       | .135 (Daily Average)   |              |                         | 24,274.5         | \$485.47                    | 4,580.0                        | 5.30 (Avg)                        |

59% Average overall efficiency of each pump and its motor.

PARKMERGED SEWAGE PUMPING STATION

DISTRICT AREA - 120 ACRES

CONTRIBUTING POPULATION - 6,600

| <u>PUMPAGE IN MILLION GALLONS:</u> |                        |                      |                     | Power Consumed by Pumps K. W. H. per Mo. | Power Consumed by Pumps cost per Mo. | Net Operating Head at Pump. Feet | Million Gallons per Month | K. W. H. per Million foot Gallons |
|------------------------------------|------------------------|----------------------|---------------------|------------------------------------------|--------------------------------------|----------------------------------|---------------------------|-----------------------------------|
| <u>Month</u>                       | <u>Total per Month</u> | <u>Daily average</u> | <u>Max. per day</u> | <u>Min. per day</u>                      |                                      |                                  |                           |                                   |
| July 1944                          | 1.40                   | .045                 | .065                | .022                                     | 949                                  | 127                              | 177.8                     | 5.34                              |
| Aug                                | 2.66                   | .086                 | .097                | .054                                     | 1,796                                |                                  | 337.8                     | 5.32                              |
| Sept                               | 3.20                   | .107                 | .130                | .097                                     | 2,161                                |                                  | 406.4                     | 5.32                              |
| Oct                                | 6.62                   | .214                 | .421                | .108                                     | 4,475                                |                                  | 840.7                     | 5.32                              |
| Nov                                | 5.70                   | .190                 | .270                | .097                                     | 3,854                                |                                  | 723.9                     | 5.32                              |
| Dec                                | 7.73                   | .249                 | .486                | .238                                     | 5,227                                |                                  | 981.7                     | 5.32                              |
| Jan                                | 8.66                   | .312                 | .702                | .259                                     | 6,526                                |                                  | 1,226.8                   | 5.32                              |
| Feb                                | 8.82                   | .315                 | .497                | .292                                     | 5,964                                |                                  | 1,120.1                   | 5.32                              |
| Mar                                | 11.78                  | .380                 | .724                | .130                                     | 7,964                                |                                  | 1,496.1                   | 5.32                              |
| Apr                                | 10.41                  | .347                 | .626                | .238                                     | 7,037                                |                                  | 1,322.1                   | 5.32                              |
| May                                | 11.48                  | .370                 | .508                | .335                                     | 7,760                                |                                  | 1,458.0                   | 5.32                              |
| June                               | 10.76                  | .359                 | .389                | .346                                     | 7,271                                |                                  | 1,366.5                   | 5.32                              |
| Total Per year                     | 90.22                  | .247                 | (Daily Average)     | 60,984                                   | \$1,219.68                           |                                  | 11,458                    | 5.32 (avg)                        |

59% Average overall efficiency of each series pumping unit and motors.

# D I V I S I O N   O F   D E S I G N

(These items refer to plans and specifications and not to actual construction)

|                                                          | A P P R O X I M A T E   C O S T         |                                          |                              |            |
|----------------------------------------------------------|-----------------------------------------|------------------------------------------|------------------------------|------------|
|                                                          | Plans and<br>Specifications<br>Complete | Plans and<br>Specifications<br>Under Way | Plans and<br>Surveys<br>Only |            |
|                                                          |                                         |                                          |                              |            |
|                                                          |                                         |                                          |                              |            |
| <u>Major Divisions</u>                                   |                                         |                                          |                              |            |
| Bridges - County Roads                                   |                                         |                                          |                              | \$ 28,225  |
| Bridges - 2nd 1/4¢ gas tax, Major Streets                |                                         |                                          |                              | 458        |
| Miscellaneous Plans, excluding traffic<br>(County Roads) |                                         |                                          |                              | 6,463      |
| 1/4¢ Gas Tax - State Highways                            |                                         | \$ 21,577,500                            |                              | 3,593      |
| 1/4¢ Gas Tax - Major Streets                             | \$ 296,009                              | 12,391,200                               |                              | 44,628     |
| Sewers (Bond Issue 1944)                                 | 351,676                                 | 9,881,657                                |                              | 55,024     |
| Sewers, Extensions, and Pumping Stations<br>(Tax Rate)   |                                         |                                          |                              | 41,183     |
| Special Improvements                                     |                                         |                                          |                              | 8,911      |
| Traffic Engineering Section                              | 107,032                                 | 62,000                                   |                              | 25,509     |
|                                                          | \$ 754,717                              | \$ 43,912,357                            |                              | \$ 213,994 |

DIVISION OF DESIGN

These items refer to plans and specifications and not to actual construction.

| <u>STATE HIGHWAYS (One-Quarter<br/>Cent Gasoline Tax)</u>               | <u>Contract Plans</u> |                  | <u>Lands<br/>(Estimated)</u> |
|-------------------------------------------------------------------------|-----------------------|------------------|------------------------------|
|                                                                         | <u>Complete</u>       | <u>Under Way</u> |                              |
| Alemaný Boulevard, San Jose<br>Ave. to Mission Street<br>Channelization |                       | \$ 40,000        |                              |
| Mission Street Viaduct                                                  |                       | 160,000          |                              |
| Junipero Serra and<br>Alemaný Boulevards<br>Underpass                   |                       | 227,500          |                              |
| Junipero Serra Boulevard<br>and Stanley Drive<br>Underpass              |                       | 190,000          |                              |
| Bayshore Freeway                                                        |                       | 21,000,000       | \$6,000,000                  |
| Fifth and Harrison Streets<br>Signals                                   | \$ 4,032              | 8,000            |                              |
| Traffic Striping, Route #2                                              |                       |                  |                              |
| " " " #56                                                               |                       |                  |                              |
| " " " #68                                                               |                       |                  |                              |
| <br><u>MAJOR STREETS (One-Quarter<br/>Cent Gasoline Tax)</u>            |                       |                  |                              |
| Market Street and<br>Portola Drive                                      | 30,000                | 3,820,000        | 1,743,000                    |
| Army Street Widening                                                    | 30,398                | 282,000          | 523,000                      |
| Clipper Street Extension                                                |                       | 189,000          | 20,000                       |
| Sixth St., Brannan to<br>Third Street                                   |                       | 2,465,000        | 535,000                      |
| Thirteenth Street, Mission<br>to Bryant Streets                         |                       | 4,440,000        | 4,536,000                    |
| San Jose Avenue, Army<br>to Brook Street                                |                       | 160,000          | 485,000                      |
| Marina Boulevard, Lyon<br>to Laguna Street                              |                       | 173,000          | 21,000                       |
| Stanley Drive Underpass                                                 | 611                   | 190,000          |                              |
| Monterey Boulevard<br>Ridgewood to San Anselmo Ave.                     |                       | 225,000          |                              |
| Trumbull St., Mission St.<br>to Alemaný Boulevard                       |                       | 52,000           | 65,000                       |

| <u>MAJOR STREETS - Cont'd</u>                               | <u>Contract Plans</u> |                  | <u>Lands</u><br><u>(Estimated)</u> |
|-------------------------------------------------------------|-----------------------|------------------|------------------------------------|
|                                                             | <u>Complete</u>       | <u>Under Way</u> |                                    |
| Sunset Boulevard Crossing<br>Golden Gate Park               |                       | \$ 300,000       |                                    |
| Geneva Avenue Extension                                     |                       | 34,000           | \$ 62,000                          |
| Nineteenth Avenue Signals                                   | \$ 103,000            | 14,000           |                                    |
| Junipero Serra Boulevard<br>Ocean to Nineteenth Ave.        |                       | 31,200           |                                    |
| Market Street, Gough to<br>Castro Street                    | 235,000               |                  |                                    |
| Alemaný Boulevard, San Jose<br>Ave. to Junipero Serra Blvd. | 30,000                |                  | 450                                |

#### 1944 SEWER BONDS

|                                               |         |           |           |
|-----------------------------------------------|---------|-----------|-----------|
| General Engineering<br>(Consultant \$8,000)   |         |           |           |
| Lake Merced Sewer System                      |         | 2,500,000 |           |
| Richmond- Plant Enlargement                   |         | 600,000   |           |
| Napoleon Street Sewer                         | 147,000 |           |           |
| La Playa Street Sewer                         | 80,000  |           |           |
| Potrero Avenue Sewer                          | 24,676  |           |           |
| Twenty-third Street Sewer                     |         | 25,000    |           |
| Pine and Broderick Sts. Sewer                 |         | 67,000    |           |
| Vicente Street Outfall                        |         | 104,600   |           |
| Lake Street Sewer                             |         | 179,000   |           |
| Forty-sixth Ave. & Lincoln Way<br>Diversion   |         | 28,000    |           |
| Lower Islais Creek Sewers                     |         | 200,000   |           |
| Seventh Street Sewer -<br>under S. P. tracks  |         | 6,057     |           |
| Upper Army Street Sewers                      | 100,000 | 172,000   |           |
| Alemany Sewer - Islais Creek                  |         |           |           |
| Eighteenth Street Sewer<br>Sections "A" & "B" |         | 500,000   |           |
| North Point Treatment Plant                   |         | 5,500,000 | 1,350,000 |



MISCELLANEOUS PLANS  
(County Roads)

Plans and  
Surveys Only

|                                                                                                    |          |
|----------------------------------------------------------------------------------------------------|----------|
| Special Improvements<br>(Engineering studies for which no<br>special appropriations had been made) | \$ 8,911 |
| Traffic - Division of Design                                                                       | 16,061   |
| Street Signs - new and repair                                                                      | 113      |
| Traffic Striping                                                                                   | 474      |
| Traffic - Maintenance Control Devices                                                              | 396      |
| Traffic - Directional Signs                                                                        | 126      |
| Traffic - School Pedestrian Lanes, etc.                                                            | 363      |
| Traffic - Stop - Go Signals                                                                        | 567      |
| Bernal Avenue - West Side                                                                          | 396      |
| Broadway Tunnel (Borings)                                                                          | 140      |
| (Geologist)                                                                                        | 850      |
| (Engineering)                                                                                      | 112      |
| Islais Creek Bridge (new) (Consultant)                                                             | 24,000   |
| (Borings)                                                                                          | 1,397    |
| (Soil analysis)                                                                                    | 1,960    |
| (Test piles)                                                                                       | 664      |
| (Engineering)                                                                                      | 204      |
| Postwar planning                                                                                   | 4,965    |

SEWERS, RICHMOND-SUNSET SEWAGE  
TREATMENT PLANT, AND SEWAGE  
PUMPING STATIONS

|                                     |        |
|-------------------------------------|--------|
| Miscellaneous Sewer Extensions      | 1,734  |
| Richmond-Sunset Treatment Plant     | 2,501  |
| Sewage Pumping Stations             | 773    |
| Storm and Sanitary Sewers (Studies) | 12,981 |
| (Engineering)                       | 6,587  |
| Sewage Disposal Studies             | 16,607 |

STREET IMPROVEMENT ASSESSMENTS, ETC.ASSESSMENTS AND BONDS FOR STREET WORK

|                                                      |             |
|------------------------------------------------------|-------------|
| Assessments issued for cost of street work performed | 5           |
| Cost of street improvements covered by assessments   | \$26,163.72 |
| Receipts for bond payments issued                    | 88          |
| Amount of bond payments collected                    | \$4,399.38  |

STREET WORK PROCEEDINGS

|                                                               |     |
|---------------------------------------------------------------|-----|
| Resolutions of Intention passed                               | 10  |
| Street improvements recommended under Resolution of Intention | 9   |
| Notices of Street Improvement posted                          | 705 |
| Notices of Resolution of Intention mailed                     | 500 |
| Ordinances ordering performance of street improvements passed | 6   |
| Proposals for street improvements published                   | 6   |
| Awards of Contract for street improvement published           | 5   |
| Notices of Recordation posted                                 | 66  |
| Notices of Recordation mailed                                 | 98  |
| Private contracts granted                                     | 25  |

NOTICES, PERMITS, AND INVESTIGATIONS

|                                          |       |
|------------------------------------------|-------|
| Notices to construct or repair sidewalks | 2,706 |
| Notices to construct bulkheads           | 18    |
| Notices to remove obstructions           | 274   |
| Notices to obtain curb lowering permits  | 62    |
| Notices to construct guard rails         | 4     |

Notices, Permits, and Investigations  
(Continued)

|                                         |       |
|-----------------------------------------|-------|
| Notices to obtain oil tank permits      | 5     |
| Notices to reconstruct side sewer traps | -     |
| Notices to replace side sewer covers    | 53    |
| Notices to obtain street space permits  | 211   |
| Street space permits reported on        | 546   |
| Oil tank permits reported on            | 46    |
| House moving permits reported on        | 21    |
| Miscellaneous calls and investigations  | 2,309 |
| Blasting bonds set and jobs supervised  | 6     |
| Curb lowering permits                   | 259   |

PERMITS AND FEES FOR CORPORATION TRENCHES

|                                | <u>Permits</u> | <u>Lin. Ft.</u> | <u>Fees</u>  |
|--------------------------------|----------------|-----------------|--------------|
| Pacific Gas & Electric Company | 1,734          | 14,504          | \$2,704.50   |
| San Francisco Water Department | 3,376          | 4,588           | 5,107.50     |
| Pacific Tel. & Tel. Company    | 93             | 7,276           | 204.00       |
| Western Union                  | 2              | -               | 3.00         |
| Edwin J. Tobin                 | <u>1</u>       | <u>6,700</u>    | <u>51.00</u> |
| Totals                         | 5,206          | 33,068          | \$8,070.00   |

SPECIAL PERMITS

|                              | <u>Number</u> | <u>Fees</u> |
|------------------------------|---------------|-------------|
| Oil Tanks                    | 29            | \$ 49.50    |
| Curb Lowering                | 259           | 6,498.70    |
| Street Space                 | 546           | 1,938.00    |
| House Moving                 | 21            | 42.00       |
| Sub-sidewalk                 | 2             | 40.00       |
| Oil Tank Permits Reported on | 46            | -           |

DIVISION OF SURVEYS

The work performed by the Division of Surveys includes the following:

Data used by the surveyors in the field in connection with each survey were computed and assembled. From the surveyor's field notes, monument lines were adjusted and monument maps corrected. Maps were prepared of street widenings, openings, closings, extensions, etc., and filed in the office of the County Recorder. Copies of all recorded maps showing changes that affect assessment values were furnished the Assessor's office.

The sectional maps of the City and County, which total 354 sheets, and show all the official data for street name changes, street openings and closings, extensions, widenings, and all property acquired or sold by the City and County of San Francisco, were kept up to date.

One new index map for monuments and monument lines and another, covering all subdivisions in the City were completed.

All appeals from the decisions of the City Planning Commission regarding building zone changes which were presented to the Board of Supervisors were examined to determine if signatures representing a sufficient area had been secured to enable the Board to act on the appeal.

All actions to quiet title to land that were referred to the City Attorney were verified to determine if any City and County property was involved in any of these actions.

Right of way maps showing in detail properties to be acquired for street widenings and freeways together with deed descriptions of the properties were prepared and checked for the following projects:

Portola Drive - Waithman Way to St. Francis Circle  
Army Street - Van Ness Avenue South to Guerrero Street  
Guerrero Street - Army Street to San Jose Avenue

San Jose Avenue - Guerrero to Brook Street  
 Bayshore Freeway - Augusta to Third Street  
 Junipero Serra Extension in Joint Highway  
 District #10, San Mateo County

#### Maps Approved and Filed

Sawyer Street Extension  
 West View Terrace Subdivision #2  
 Brookdale Terrace Subdivision #2  
 Nineteenth Avenue and Ocean Avenue Widening  
 El Camino Del Mar Widening  
 Mojave Street Opening  
 Rey Street Extension  
 Parkmerced Housing Project

Other office work consists of computing, writing and comparing all property descriptions for the Real Estate Department; investigating and approving maps of proposed real estate subdivisions, and also checking street descriptions for dedication purposes; answering petitions; making estimates; and furnishing information to the various municipal departments and to private engineers and surveyors, in addition to answering inquiries made by the public to the office of the Division of Surveys.

#### SURVEY SECTION

##### (Field Work)

A total of 556,960 lin. ft. (105.50 miles) of line was run, covering approximately 816 City blocks, or their equivalent, as follows:

|                                                                    | <u>Lin.Ft.</u> |
|--------------------------------------------------------------------|----------------|
| Line and grade points for new street and sewer construction        | 43,627         |
| Subsidence surveys                                                 | 55,830         |
| Monument line surveys                                              | 135,105        |
| Freeways and other postwar projects                                | 219,753        |
| Topographical surveys as follows:                                  | 102,645        |
| Glen Park & Corona Heights Playground                              |                |
| Potrero Industrial Area                                            |                |
| Richmond-Sunset Sewage Treatment Plant                             |                |
| Twin Peaks Boulevard Figure Eight                                  |                |
| O'Shaughnessy Boulevard (Adjacent Areas)                           |                |
| Hunter's Point                                 "                 " |                |

In connection with the above surveys, 87 concrete monuments were set, checked, referenced or re-capped.

Among the postwar projects are the following surveys:

|                                                                                                                            | <u>Lin.Ft.</u> |
|----------------------------------------------------------------------------------------------------------------------------|----------------|
| Mission Street Widening                                                                                                    |                |
| from the Embarcadero to 26th Street                                                                                        | 40,450         |
| Sixth Street Viaduct                                                                                                       |                |
| from Brannan to 16th Street                                                                                                | 12,000         |
| West End Map #2, bounded by San Jose Avenue,<br>Mission, Ottawa and Regent Streets<br>(re-establishment of monument lines) | 16,300         |

A complete examination of curbing, pavement, sidewalks, and sewers, and a survey of 26,690 feet, covering 73 blocks, were made for Parkmerced housing project. In addition, 33,600 feet of monument lines were run and 37 monuments set for this subdivision.

A total of 36.2 miles of precise levels was run and 1389 benches were either set, checked or re-established. A resume' of the work follows:

#### PRECISE LEVELS AND BENCH MARKS

| <u>District</u>     | <u>Bench Marks</u> | <u>Distance--Miles</u> |
|---------------------|--------------------|------------------------|
| 100 Vara            | 333                | 15.5                   |
| Western Addition    | 200                | 4.5                    |
| Potrero             | 59                 | 2.5                    |
| South San Francisco | 159                | 3.4                    |
| Homesteads          | 334                | 3.2                    |
| Richmond            | 173                | 3.6                    |
| Parkmerced          | 131                | 3.5                    |
| Total Bench )       |                    | Total                  |
| Marks Checked )     | 1389               | Miles                  |
| and Re-established) |                    | 36.2                   |

#### Surveys Performed

|                               |            |
|-------------------------------|------------|
| Public contracts              | 2          |
| Private contracts             | 30         |
| Private contracts (Resurveys) | 11         |
| Municipal departments         | <u>163</u> |
| Total for public improvements | 206        |

#### Lot Surveys

|                       |          |
|-----------------------|----------|
| Private owners        | 1        |
| Municipal departments | <u>2</u> |
| Total lot surveys     | <u>3</u> |
| Total surveys         | 209      |

#### FEEES RECEIVED FOR SURVEYS

| <u>1944</u> | <u>Amount</u> |
|-------------|---------------|
| July        | \$ --         |
| August      | 765.00        |
| September   | --            |

| <u>1944</u> (Cont'd.) | <u>Amount</u> |
|-----------------------|---------------|
| October               | \$1,920.00    |
| November              | --            |
| December              | 200.00        |
| <u>1945</u>           |               |
| January               | 65.00         |
| February              | 651.00        |
| March                 | 420.00        |
| April                 | 315.00        |
| May                   | 280.00        |
| June                  | <u>925.00</u> |
| Total                 | \$5,541.00    |

#### GRADE SECTION

In Bernal Heights a large area would be inaccessible if streets were improved to the present grades. Studies were completed to provide suitable ingress to and egress from this section by the use of one-way streets and alignment changes which would have grades varying from 2% to 14%.

At the request of interested property owners new profiles of streets were made in connection with re-establishing grades for the following streets:

Ellsworth Street  
 Gates Street  
 Cambridge Street  
 Valencia Street  
 Guerrero Street  
 Twenty-fifth Street  
 Elmira Street

Tentative maps for the subdivision of Brookdale Terrace, Calvary Cemetery, and Mayfair Terrace were submitted for approval of proposed grades, sidewalk and street widths.

On Guerrero Street, between Fourteenth Street and San Jose Avenue, sidewalk widths were officially reduced from fifteen feet to nine feet in order to provide this roadway with two additional traffic lanes.

Sidewalk widths on Webster Street from Duboce Avenue to Broadway Street were officially reduced from fifteen feet to nine feet.



Evans Avenue, looking west  
Before and after reconstruction



DIVISION OF CONSTRUCTION

On Evans Avenue between Third and Mendell Streets, and on Newhall Street between Evans and Fairfax Avenues, the roadways were raised to the official grade and reconstructed with a red rock base 6-in. below the finished grade on which was laid a 4-in. asphaltic concrete pavement with 2-in. wearing surface. The existing granite curbs were reset and new curbing was built. The existing sewers were abandoned and five old manholes filled with sand. New 8-in., 12-in., and 15-in. vitrified clay pipe sewers were constructed together with Y-branches and two new brick manholes; two old manholes were raised and three catchbasins replaced. Low and high pressure hydrants and the 12-in. auxiliary water supply main were raised to original grade. Contract cost, \$28,256.

Mission Street      On Mission Street between 22d and 25th Streets, and on the west side between 20th and 21st Streets, concrete parking lanes, 8-inches thick, and 6½-ft. wide have been completed. The work included the removal of the existing pavement, construction of concrete parking lanes, re-setting and redressing the stone curb, and replacement of concrete sidewalks adjoining the curbs. Seven catchbasins were rebuilt, 9 brick catchbasins and 16 concrete curb inlets were constructed. Contract cost, \$31,013.

Clarendon Ave.      From Laguna Honda Boulevard to Clarendon Heights, Extension      all damaged patches of both the asphaltic concrete wearing surface and the macadam base were repaired, and over the whole pavement area, a 1/2-inch emulsified asphalt armor coat was laid. Contract cost, \$8,027.

Ulloa Street between Forty-sixth and Forty-eighth Avenues was improved by grading and the construction of an asphaltic concrete wearing surface on a 6-in. rock base, concrete sidewalks and curbing, sewers, brick manholes and catchbasins. The work was done by public assessment at a total cost of \$14,847, of which the City contributed \$4,015.

Log Cabin Ranch Road Log Cabin Ranch is located near La Honda in San Mateo County. The entrance road from the Alpine Creek Highway to the ranch has been reconstructed by placing a 4-in. macadam base with a 1-in. emulsified asphalt wearing surface on the existing roadbed, including 12-in. and 30-in. pipe culverts. On the high side of the road, the drainage ditch was re-shaped and the bottom of the ditch built 12 inches below the finished roadway. To serve new barns and other facilities, an additional roadway of 1600 lineal feet was constructed with a 4-in. rock base and 1-in. armor coat, including the necessary drainage. Contract cost, \$10,480. This work was done at the request of the Chief Probation Officer of the Juvenile Court.

#### Improved Under Private Contract

Property owners may enter into agreements with contractors to do street improvement work provided that all such work is supervised under City inspection and conforms to the City's standard specifications.

The following streets were improved during the year:

Burke Street, Third Street, southeasterly

Cambridge Street

Felton to Burrows Street, westerly half

Cielito Drive

North of Geneva Avenue to Parque Drive

Ellsworth Street, Crescent Avenue, southerly

Esquina Drive and Carrizal Street  
From Geneva Avenue, northerly

Esquina Drive, northerly from  
Geneva Avenue and Parquet Drive

Forty-fourth Avenue, Pacheco to Quintara Street

Forty-fourth Avenue, Ortega to Pacheco Street

Forty-fourth Avenue, Ulloa to Vicente Street

Gates Street, Crescent Avenue, southerly

Palou Avenue, Rankin to Selby Street

Parque and Cielito Drives  
From Geneva Avenue, northerly

Parque Drive  
North of Geneva Avenue to Carrizal Street

Quesada Avenue, between  
Rankin and Selby Streets

Quintara Street  
Forty-third to Forty-fourth Avenue

Sawyer Street  
Sunnydale to Visitacion Avenue

Southern Pacific Company, San Bruno Branch Line  
Twenty-third and Folsom to Thirtieth Street

Sweeny Street - Cambridge Street, easterly

Thirty-first Avenue  
Pacheco to Quintara Street

Thirty-third Avenue, Pacheco to Quintara Street

Wallace Avenue, Jennings Street, westerly

Wheeler Avenue, Lathrop Avenue  
to southerly termination

Rey Street, Sunnydale Avenue, northerly



Outlet structure  
Pile support and rock fill



Reinforcement for  
3-compartment sewer and outlet structure

SEWERS

Lincoln  
Way  
Storm  
Relief

A contract has been let and work started on the first large sewer of the City's major improvement program. The project consists of a three-compartment reinforced concrete storm sewer along Lincoln Way, connecting with existing trunk sewers at 48th Avenue and Lincoln Way through an elaborate overflow structure, and terminating on the Pacific Ocean Beach west of the Great Highway in an outlet structure having three tide-gates. These gates will prevent release of odors and blocking with sand.

Construction began in May, 1945, proceeding eastward from the outlet structure.

The status of the work to date is as follows: The trench



Jetting and Driving Concrete Piles

was excavated for a length of 350 feet; all concrete piles were cast and driven; the invert of the outlet structure and 150 feet of three-compartment sewer were poured; form work was erected for the walls and roof of the outlet structure and for a section of the three-compartment sewer; reinforcing steel was placed in the forms. Progress has been hampered by manpower shortage and material difficulties.

Estimated expenditure to date, \$28,500. Contract cost, \$174,892.

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upper<br>Army<br>Street<br>Section "B" | In 27th, Guerrero, and Army Streets, from Church Street to San Jose Avenue, construction work was started on the new 6'-6" circular concrete sewer to replace the present 5-ft. circular sewer which will be removed. To date, 265 ft. of excavation and lagging have been completed, 97 ft. of invert concrete poured, and 160 ft. of 12-in. vitrified clay pipe sub-drain have been laid. The sum of \$4,400 has been expended. Contract cost, \$100,000. |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                |                                                                                                                                                                                                                                                                                                                                                                               |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Army<br>Street | In Army Street from Valencia to Kansas Street, and in Kansas Street between Army and Marin Streets, the main brick sewer will be cleaned and the sides, arches, and inverts will be lined with a 1/2 in. coat of gunite. To date, 89,300 sq. ft. of sides and arches and 36,500 sq.ft.of the invert have been lined. There has been expended \$6400. Contract cost, \$48,208. |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                |                                                                                                                                                                                                                |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bush<br>Street | Between Franklin Street and Van Ness Avenue, a 15-in. vitrified clay pipe sewer with Y-branches and one brick manhole have been constructed to replace the old sewer which had failed. Contract cost, \$5,922. |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

On Bush Street from Octavia to Gough Street, the existing concrete pipe sewer was removed and replaced by an 8-in. vitrified clay pipe sewer. Contract cost, \$5,125.

California Street      Between Steiner and Pierce Streets, the old 16-in. concrete pipe sewer was removed and a new 8-in. vitrified clay pipe sewer with Y-branches was built. Contract cost, \$7,038.

Lombard Street      From Larkin to Polk Street, the old sewer was removed and 15-in. vitrified clay pipe sewer was constructed. Contract cost, \$5,990.

### BRIDGES

Islais Creek      The existing deck work of the east and west roadway and the sidewalks were removed. New wood sidewalks and timber deck with bituminous wearing surface were completed. After the deck work was removed, all exposed steel work was cleaned and painted. Some reinforced concrete construction was done at the north and south abutments together with the necessary conform pavement. Contract cost, \$6,992.



Islais Creek Bridge  
Placing new timber deck

MUNICIPAL ASPHALT PLANT

The chain belt elevator which was installed in 1914 for delivering materials from the receiving hopper to the storage bins, notwithstanding frequent repairs and parts replacements, had become so badly worn and inefficient in operation that it was decided to replace it with a modern type of elevator. At the request of the Bureau of Street Repair, plans and specifications were prepared and a contract awarded for furnishing materials and performing work necessary to install new elevating equipment.

The old chain bucket elevator and framework were dismantled, motors and countershafting in the penthouse over the storage bins were removed and stored in the yard area. The receiving hopper and elevator pit were altered to accommodate the new equipment.

A 5 h.p. motor-driven, inclined feeder belt conveyor, approximately 17 ft. long, was installed in the pit to convey materials from the receiving hopper to the elevator boot. The elevator is of the belt bucket type, approximately 81 ft. centers between head and tail pulleys, being enclosed in a sectional steel casing, provided with a safety ladder. The head shaft is equipped with a differential back stop (band-brake type), driven by a 30 h.p. motor.

A 5 h.p. motorized speed reducer was installed on the distributing conveyor in the penthouse to replace the belt-driven countershaft and pulleys. Push-button starters for operating the elevator are located in the penthouse and at ground level. To prevent machinery from being started while workmen are in the elevator pit, a safety cut-out switch is mounted on the wall alongside the feeder conveyor.

New equipment was designed and installed for operation on 220 volts, 3-phase, with necessary switches of 600 amperes'



capacity.

The old elevator had a rated capacity of 90 tons of material per hour; the new equipment under test delivered 124 tons per hour.

Contract cost, \$18,979.

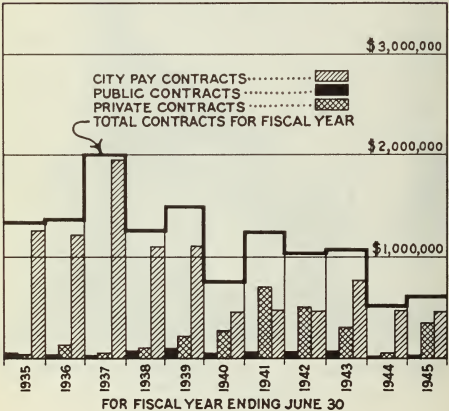


Municipal Asphalt Plant  
Belt Bucket Elevator for Material Storage Bins

WORK PERFORMED UNDER CONTRACT

|                        |                |                |  |
|------------------------|----------------|----------------|--|
| Main Sewers            |                | \$ 76,661      |  |
| Bridges                |                | 9,053          |  |
| Miscellaneous          |                | 50,199         |  |
| Boulevards and Streets |                |                |  |
| Paid by City           | \$ 287,501     |                |  |
| Public Assessment      | 12,330         |                |  |
| Private Contract       | <u>170,523</u> | <u>470,354</u> |  |
|                        |                | \$ 606,267     |  |

**STREET WORK PERFORMED UNDER CONTRACT  
1935 TO 1945 INCLUSIVE**



CURRENT CONTRACT DATA 1944-1945

Applying to City Pay Contracts and Major Contracts Involving City Funds

| Description                                                                                          | Contractor                       | Awarded  | Completed<br>Date | Contract<br>Amount | Expended<br>to 6/30/45 | Fund                                  |
|------------------------------------------------------------------------------------------------------|----------------------------------|----------|-------------------|--------------------|------------------------|---------------------------------------|
| <u>BOULEVARDS, PAVING, GRADING, ETC.</u>                                                             |                                  |          |                   |                    |                        |                                       |
| Clarendon Ave. Extension<br>from Laguna Honda Blvd.<br>to Clarendon Heights                          | Chas. I. Harney                  | 2/16/45  | 4/11/45           | \$ 8,026.78        | \$ 8,026.78            | Special<br>Road<br>Improvement        |
| Evans Avenue between<br>Third and Mendell Sts.                                                       | The Fay Improve-<br>ment Company | 9/1/44   | 1/5/45            | 28,255.78          | 28,255.78              | Sp. Rd. Impr.<br>General              |
| Forty-third Ave.<br>between Quintara &<br>Riviera Sts., et al                                        | Eaton & Smith                    | 6/14/44  | 9/29/44           | 3,648.17           | 2,149.38*              | Sp. Rd. Impr.<br>Public<br>Assessment |
| Guerrero St., 14th St. to<br>San Jose Avenue, et al<br>(Rail salvage and street<br>pavement repairs) | Eaton & Smith                    | 1/5/44   | 8/21/44           | 99,844.36          | 99,844.36              | Special<br>Road<br>Improvement        |
| Log Cabin Ranch<br>Road Improvements                                                                 | California<br>Paving Company     | 10/13/44 | 4/24/45           | 10,480.87          | 10,480.87              | General                               |
| Mission Street between<br>Twentieth and<br>Twenty-fifth Streets                                      | M. J. Lynch                      | 1/3/45   | 5/7/45            | 31,013.12          | 31,013.12              | Special<br>Road<br>Improvement        |
| Planing Bituminous<br>Pavement Surfaces<br>Contract No. 7                                            | Wells,<br>The Planer             | 3/3/44   | 8/16/44           | 38,070.91          | 38,070.91              | Special<br>Road<br>Improvement        |

CURRENT CONTRACT DATA 1944-1945

Applying to City Pay Contracts and Major Contracts Involving City Funds

| Description                                                                 | Contractor                     | Awarded | Completed<br>Date | Contract<br>Amount | Expended<br>to 6/30/45 | Fund                                  |
|-----------------------------------------------------------------------------|--------------------------------|---------|-------------------|--------------------|------------------------|---------------------------------------|
| <u>BOULEVARDS, PAVING, GRADING, ETC. - Continued</u>                        |                                |         |                   |                    |                        |                                       |
| Planing Bituminous<br>Pavement Surfaces<br>Contract No. 8                   | Wells,<br>The Planer           | 7/5/44  | 1/23/45           | 100 \$39,884.41    | \$39,884.41            | Special<br>Road<br>Improvement        |
| Planing Bituminous<br>Pavement Surfaces<br>Contract No. 9                   | Wells,<br>The Planer           | 1/19/45 | 5/22/45           | 100 21,118.19      | 21,118.19              | Spec.Gas Tax<br>Street<br>Improvement |
| Tapia Drive, between<br>Holloway Drive and<br>Arballo Drive                 | Eaton & Smith                  | 6/30/44 | 9/9/44            | 100 2,479.30       | 2,479.30               | Special<br>Road<br>Improvement        |
| Ulloa Street between<br>Forty-sixth and<br>Forty-eighth Avenues             | Chas.L.Harney                  | 3/27/42 | 10/14/44          | 100 14,847.78      | 4,015.62*              | Sp.Rd.Impr.<br>Public<br>Assessment   |
| Wheeler Avenue (West 1/2)<br>between Lathrop Ave. and<br>Southerly Terminus | Eaton & Smith                  | 6/21/44 | 9/9/44            | 100 2,162.40       | 2,162.40               | Special<br>Road<br>Improvement        |
| <u>SEWERS</u>                                                               |                                |         |                   |                    |                        |                                       |
| Army Street from<br>Valencia to Kansas St.<br>(Sewer repairs)               | Cement Gun<br>Construction Co. | 5/11/45 | 6/30/45           | 13 48,208.00       | 6,400.00               | General                               |
| Bush St. from Franklin St.<br>to Van Ness Avenue<br>(Sewer replacement)     | M. J. Lynch                    | 6/2/44  | 7/21/44           | 100 5,922.20       | 5,922.20               | General                               |

CURRENT CONTRACT DATA 1944-1945

Applying to City Pay Contracts and Major Contracts Involving City Funds

| Description                                                                           | Contractor                          | Awarded | Completed<br>Date | %   | Contract<br>Amount | Expended<br>to 6/30/45 | Fund    |
|---------------------------------------------------------------------------------------|-------------------------------------|---------|-------------------|-----|--------------------|------------------------|---------|
| <u>SEWERS - Continued</u>                                                             |                                     |         |                   |     |                    |                        |         |
| Bush Street between<br>Octavia & Gough Sts.<br>(Sewer repairs)                        | E. J. Treacy                        | 4/4/45  | 6/21/45           | 100 | \$5,125.36         | \$5,125.36             | General |
| California St. between<br>Pierce & Steiner Sts.<br>(Sewer repairs)                    | M. J. Lynch                         | 4/13/45 | 6/21/45           | 100 | 7,038.00           | 7,038.00               | General |
| Commercial St. Sewage<br>Pumping Station<br>(Pumping unit)                            | W.C. Wanderer                       | 2/9/45  | 5/18/45           | 100 | 2,778.50           | 2,778.50               | General |
| Hassler Health Home<br>Sewage Treatment Plant<br>(furnish and install<br>chlorinator) | Wallace &<br>Tiernan<br>Sales Corp. | 2/26/45 | 3/28/45           | 100 | 1,794.00           | 1,794.00               | General |
| Islais Creek Wood Box<br>Sewer (Repairs)                                              | Martin Murphy                       | 6/28/44 | 8/24/44           | 100 | 1,760.00           | 1,760.00               | General |
| Lincoln Way<br>(Storm Drain)                                                          | Healy-Tibbitts<br>Construction Co   | 3/23/45 | 6/30/45           | 16  | 174,892.00         | 28,500.00              | General |
| Lombard Street between<br>Larkin & Polk Sts.<br>(Sewer replacement)                   | Martin Murphy                       | 6/21/44 | 8/15/44           | 100 | 5,990.00           | 5,990.00               | General |

CURRENT CONTRACT DATA 1944-1945

Applying to City Pay Contracts and Major Contracts Involving City Funds

| Description                                                         | Contractor                        | Awarded  | Completed<br>Date | Completed<br>% | Contract<br>Amount | Expended<br>to 6/30/45 | Fund                                   |
|---------------------------------------------------------------------|-----------------------------------|----------|-------------------|----------------|--------------------|------------------------|----------------------------------------|
| <u>SEWERS - Continued</u>                                           |                                   |          |                   |                |                    |                        |                                        |
| Marina Sewage Pumping<br>Station (Painting)                         | A.R.Reid Co.                      | 1/12/45  | 2/21/45           | 100            | \$ 850.00          | \$ 850.00              | General                                |
| Parkmerced - Test<br>borings for proposed<br>sewer tunnel           | E. J. Treacy                      | 3/8/44   | 7/26/44           | 100            | 1,582.71           | 1,582.71               | General                                |
| Pierce St. between<br>Pacific Ave. & Jackson St.<br>(Sewer repairs) | M. J. Lynch                       | 5/2/45   | 6/30/45           | 100            | 4,520.00           | 4,520.00               | General                                |
| Upper Army Street<br>Sewer Section "B"                              | Eaton & Smith                     | 5/4/45   | 6/30/45           | 4.4            | 100,000.00         | 4,400.00               | General                                |
| <u>BRIDGES</u>                                                      |                                   |          |                   |                |                    |                        |                                        |
| Islais Creek Channel<br>& Third Street<br>(Test Piles)              | Healy-Tibbitts<br>Construction Co | 11/29/44 | 2/16/45           | 100            | 664.00             | 664.00                 | Special<br>Road<br>Improvement         |
| Islais Creek Channel<br>& Third Street<br>(Test Borings)            | John N. Pitcher                   | 10/6/44  | 12/8/44           | 100            | 1,397.50           | 1,397.50               | Special<br>Road<br>Improvement         |
| Islais Creek Bridge<br>at Third Street<br>(Repairs)                 | E. J. Treacy                      | 9/27/44  | 4/16/45           |                | 6,991.76           | 6,991.76               | Speco.Gas Tax<br>Street<br>Improvement |

CURRENT CONTRACT DATA 1944-1945

Applying to City Pay Contracts and Major Contracts Involving City Funds

| Description                                                                             | Contractor                           | Awarded | Completed<br>Date | %   | Contract<br>Amount | Expended<br>to 6/30/45 | Fund                           |
|-----------------------------------------------------------------------------------------|--------------------------------------|---------|-------------------|-----|--------------------|------------------------|--------------------------------|
| <u>MISCELLANEOUS</u>                                                                    |                                      |         |                   |     |                    |                        |                                |
| Auxiliary Water Supply<br>(Filling Abandoned<br>Cisterns)                               | M. J. Lynch                          | 6/23/44 | 7/26/44           | 100 | \$2,598.00         | \$2,598.00             | General                        |
| Auxiliary Water Supply<br>System (Repairs to<br>Cisterns)                               | Cement Gun<br>Construction Co        | 6/23/44 | 10/5/44           | 100 | 13,690.06          | 13,690.06              | General                        |
| Broadway between Mason<br>and Larkin Streets<br>(Diamond Drill Core<br>Holes)           | Mitchell<br>Diamond<br>Drill Company | 6/28/44 | 1/23/45           | 100 | 6,624.90           | 6,624.90               | Special<br>Road<br>Improvement |
| Fortieth & Forty-third<br>Avenues between Noriega<br>& Ortega Streets<br>(Sand Removal) | Chas. L. Harney                      | 3/2/45  | 4/3/45            | 100 | 3,100.00           | 3,100.00               | Special<br>Road<br>Improvement |
| Great Highway - opposite<br>Quintara & Rivera Sts.<br>(Beach Protection)                | Arnold<br>Trucking Co.               | 2/28/45 | 4/16/45           | 100 | 5,207.00           | 5,207.00               | General                        |
| Municipal Asphalt Plant<br>Repair of Storage Ele-<br>vating Equipment                   | Adam Arras<br>& Son                  | 10/9/44 | 6/21/45           | 100 | 18,979.00          | 18,979.00              | Special<br>Road<br>Improvement |

\*Amount paid by City - Balance paid by property owners.

LABORATORY AND TESTING SECTION

The activities of this section include the inspection and testing of materials furnished by contractors and bidders on various contracts for the Department of Public Works, the Purchaser of Supplies, and the Public Utilities Commission.

All concrete, concrete aggregates, sand, and cement furnished on all City contracts are inspected and tested. Routine inspection is made in all plants furnishing premixed concrete. Samples of concrete are stored under moist conditions, and then tested at seven days and at twenty-eight days.

Inspection is made of asphalt plants having paving contracts with the City. This section supervises the grading of sand and rock, and checks the quality of the mixtures, including their temperature at the plant as well as temperature of the finished mixtures.

Due to the many restrictions placed on the use of lacquer and lacquer solvents by the U.S. Government during the war, a substitute formula was used as a specification for paint required in traffic striping, cross-walk painting, and pavement markings. At the request of the Bureau of Architecture, paint used for schools and other City buildings was analyzed for specification requirements.

Samples of cast iron, wrought iron, steel, brass, and bronze used on City contracts were checked for physical and chemical properties. Canned fruits and vegetables, soaps, soap powders and detergents, lubricating oils, compounded oils, and greases were analyzed for quality.

At the request of the Fire Department, fireproofing compounds, materials, and insecticide solutions were analyzed as to inflammable characteristics. As a result of these investigations several commercial products have been prohibited from use in San Francisco.



DEATHS AND RETIREMENTSClarence C. Dennis

Mr. Dennis entered the employ of the City on August 21, 1911, and worked as levelman on the Hetch Hetchy project until February 28, 1913. Beginning May 2, 1915, he worked as assistant and photographer, field assistant, and inspector of streets and sewers, respectively, until his retirement, October 2, 1944. During this time he took several leaves of absence on account of illness. His actual service totaled 25 years.

Louis G. Tegtmeyer

On September 1, 1908, Mr. Tegtmeyer was employed by the City as an engineering draftsman. Except for the period from November 1, 1909, until October 21, 1912, he worked continuously as engineering draftsman, sanitary engineering designer, and civil engineering designer (successively) until his voluntary retirement on April 1, 1945, having served the City faithfully for 32 years. During this time he was engaged principally with the designing of storm water sewers, and for many years was in charge of this section.

Anthony Leon Auradou

Mr. Auradou was engaged by the City on September 14, 1904, as an engineering draftsman and, on August 1, 1914, was appointed cartographer. He served in this capacity until April 1, 1934, when he retired after nearly 30 years of continuous service with the City. Thereafter, he visited the office frequently to renew old acquaintances. His death took place April 15, 1945, at age 81.

Miss Mae E. Sullivan

Miss Mae E. Sullivan entered the employ of the City on June 9, 1900, as a stenographer in the office of Superintendent of Streets which department was later merged into the Bureau of Engineering. With the exception of one year in the City Architect's Office, she served continuously as stenographer and general clerk-typist until May 16, 1945, at which time, due to injuries incurred in an accident, she resigned after 45 years' of service with the City.

William C. Pidge

William C. Pidge graduated from the College of Civil Engineering at the University of California with the class of 1899 and entered the employ of the City in 1901. Except for the period between October, 1906, and January, 1909, he served the City as surveyor, assistant civil engineer, engineer of street improvement investigations, and civil engineer, respectively, until his death on May 9, 1945, after 41 years of service.

CITIZENS PROTECTIVE CORPS

The Civilian Defense activities of the Department of Public Works as represented in the Road Clearance and Demolition Corps and the Decontamination Corps of the Emergency Public Works Service were fully outlined in the annual report for the fiscal year 1943-44. The number of volunteer personnel has been constantly dwindling, probably due to the opinion that because of the successes of our Armed Forces the war is practically over and the need for volunteers in the Civilian Defense organization is past.

By Ordinance No. 2811 (Series of 1939) passed by the Board of Supervisors July 3, 1944, and approved by the Mayor July 14, 1944, the Citizens Protective Corps was created and the old ordinances with reference to Civilian Defense, excepting those which were not in conflict with the new ordinance, were repealed. The new organization was established and various duties assigned to members in connection with civilian protection and war services. The set-up is similar to Civilian Defense and consists of City officials, employees, and volunteers. A Division of Emergency Services is provided for and one of the sub-divisions of the ordinance states:

"Public Works Service under the direction of the Chief Administrative Officer is to consist of repair squads for streets and sewers, clearance squads and property decontamination squads for gassed areas. The Director of Public Works shall be the chief of this service."

The service has been organized around three City departments: namely, Public Works, Park, and Recreation. It comprises about 1150 men. In case of need, this is a sufficient nucleus to utilize the help of organized or unorganized volunteers. City employees will always be available in case of disaster and the organization is stronger than previously. Many men from the above-named departments had volunteered for protective services other

than this emergency service in which they are thoroughly trained as the work is closely allied to their regular occupations.

The organization of the Division of Emergency Services is shown on the organization chart.

All City-owned equipment is available for any type of disaster. This includes all trucks, two tractors, compressors, mechanical brooms, flushers, eductors, etc. and small tools.

Our equipment service has listed most of the heavy equipment in San Francisco. This includes all types of dirt moving machinery, cranes, cutting outfits, portable lighting plants, compressors, etc. The name, address, and phone number of the owner and person to be contacted in case of disaster is listed, and also each piece of equipment in its proper category. In case of a major disaster, this equipment would be used to perform clearance work. Questionnaires are sent to the owners at regular intervals so as to keep the records up to date.

Materials needed for emergency street and sewer repair are stored at strategic locations.

Seven of the original twenty-two clearance depots of the Civilian Defense organization have been abandoned during the year.

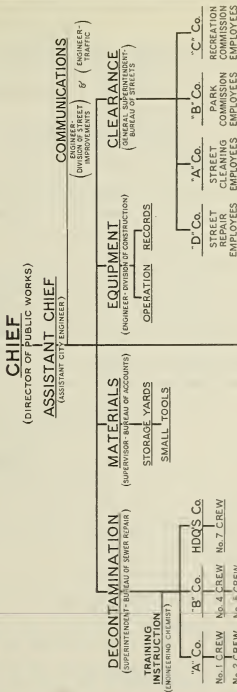
Gas Cleansing Station #2 of the Decontamination Service, formerly located in Golden Gate Park, has been abandoned and all equipment moved to Station #1 near the main Bureau of Public Works Yard. The number of crews, of ten men each, has been reduced to seven. All necessary equipment is available for this work with the exception of the Army's impregnite against war gases.

The need for disaster preparedness, not only during war but at all times, is well known, and this organization is being built up and will be maintained with this objective in mind.

# CITIZENS PROTECTIVE CORPS

## EMERGENCY PUBLIC WORKS SERVICE

### ORGANIZATION CHART



NOTE: A CREW CONSISTS OF 10 MEN

CENTRAL PERMIT BUREAU

S. J. Rosenblum, Head Clerk

The Central Permit Bureau was established in the Department of Public Works on January 8, 1932, concurrent with the adoption of the new City Charter. This Bureau was created to make it possible to clear all applications and obtain permits at one place, and this system has proved to have marked advantages over the former method of decentralized permit issuance.

It is the function of this Bureau to accept applications, expedite their approval or disapproval, issue permits, and collect the proper legal fees. Also, it is the duty of the Bureau, upon receipt of Certificates of Final Inspection from the various interested departments, to issue Certificates of Occupancy for all buildings except new one- and two-family frame dwellings.

The supervisory head of the Central Permit Bureau is also cashier for the Department of Public Works; he collects all monies due the Department and deposits same daily with the Treasurer of the City and County in compliance with Sec. 82 of the Charter.

|                                   | <u>Number of<br/>Permits issued</u> |
|-----------------------------------|-------------------------------------|
| Buildings                         | 4,453                               |
| Billboards                        | 307                                 |
| Boiler Installations              | 146                                 |
| Boiler Inspections                | 8                                   |
| House Moving                      | 21                                  |
| Demolitions                       | 34                                  |
| Flue Registrations                | 19                                  |
| Flue Permits - New buildings      | 5                                   |
| Flue Permits - Old "              | 63                                  |
| Flue Coupon Books - New Buildings | 55                                  |
| " " " Old "                       | 63                                  |
| Construct Sidewalks               | 42                                  |
| Street Space                      | 546                                 |
| Excavations                       | 288                                 |
| Side Sewers                       | 593                                 |
| Excess Costs - Side Sewers        | 39                                  |
| Sidewalk Flower Markets           | 45                                  |
| Blasting                          | 3                                   |

Number of  
Permits issued (Cont'd)

|                                       |              |
|---------------------------------------|--------------|
| Advertising                           | 4            |
| House Number Certificates             | 529          |
| Payments for Surveys                  | 29           |
| Payments for Engineering Inspection   | 48           |
| Payments for Street Improvement Bonds | 87           |
| Public Utilities Street Openings      | <u>5,237</u> |

Total number of Permits Issued - 12,664

REFUNDS MADE FROM SPECIAL AND TRUST FUNDS

|                                                         | <u>Number of<br/>Refunds</u> | <u>Amount<br/>Refunded</u> |
|---------------------------------------------------------|------------------------------|----------------------------|
| Special Permit Fund<br>(Street Space and Sub-sidewalks) | 412                          | \$18,910.00                |
| House Moving Fund                                       | 18                           | 1,800.00                   |
| Excavations                                             | 29                           | 207.00                     |
| Side Sewers                                             |                              |                            |
| Refunds to Depositors                                   | 510                          | 23,958.55                  |
| Installation costs credited to<br>General Fund          |                              | 70,130.30                  |
| Deposits on Plans                                       | 642                          | 5,465.00                   |
| Street Improvement Bonds                                | <u>2</u>                     | <u>107.04</u>              |
| Totals -                                                | 1,613                        | \$120,577.89               |

REPORT OF HOUSE NUMBERING ACTIVITIES

|                                                                                    |              |       |
|------------------------------------------------------------------------------------|--------------|-------|
| House numbers issued:                                                              |              |       |
| Private construction                                                               | 1,745        |       |
| San Francisco Housing Authority Projects                                           | <u>7,500</u> | 9,245 |
| Investigations made and complaints adjusted                                        |              | 525   |
| Changes in House Numbering ordered                                                 |              | 79    |
| Inquiries from Banks, Title Insurance<br>Companies, General Public, etc., answered |              | 1,500 |

ADDITIONAL NON-REVENUE ACTIVITIES

|                                                                                                                                 |       |
|---------------------------------------------------------------------------------------------------------------------------------|-------|
| Inquiries pertaining to age and class of<br>buildings, and other information requiring<br>reference to old applications on file | 7,255 |
| Plans brought from the basement by request<br>for reference purposes and photostating                                           | 612   |

CASHIER'S REPORTSource of Receipts

|                              |              |
|------------------------------|--------------|
| Street space permit deposits | \$ 20,150.00 |
| Sub-sidewalk       "       " | 40.00        |
| House moving       "       " | 2,100.00     |
| Side sewer       "       "   | 105,257.85   |
| Deposits on plans            | 5,550.00     |

Excavation Permits

|                                               |                 |           |
|-----------------------------------------------|-----------------|-----------|
| Special deposits                              | \$ 555.50       |           |
| Insp. fees for Excav. (Spec. deposits)        | 49.50           |           |
| "       "       (Public utility corporations) | 7,527.00        |           |
| "       "       (Lowering curbs, etc)         | <u>1,938.00</u> | 10,070.00 |

## Fees for:

|                                 |               |           |
|---------------------------------|---------------|-----------|
| Building permits                | \$56,018.90   |           |
| Billboard permits               | 614.00        |           |
| Boiler installations            | 632.00        |           |
| Boiler inspections              | 209.00        |           |
| Use of street space             | 6,498.70      |           |
| House number certificates       | 3,516.00      |           |
| House moving permits            | 42.00         |           |
| Flue registrations              | 380.00        |           |
| Flues - New buildings           | 2.50          |           |
| "       Old buildings           | 126.00        |           |
| "       New buildings (coupons) | 687.50        |           |
| "       Old buildings (coupons) | <u>180.00</u> | 68,906.60 |

|                                                     |                   |
|-----------------------------------------------------|-------------------|
| Sidewalk flower markets - fees                      | 1,512.00          |
| Side sewers - excess costs                          | 528.12            |
| Advertising charges                                 | 323.06            |
| Payments on Street Improvement Bonds                | 144.90            |
| Payments on Street Improvement Bonds (Ord. of 1934) | 4,254.48          |
| Surveys - fees                                      | 5,541.00          |
| Inspections - fees                                  | 7,945.00          |
| Miscellaneous                                       | <u>605,325.92</u> |
| Total Receipts                                      | <u>837,648.93</u> |

Note: 34 Demolition permits)  
           42 Sidewalk permits)       Issued - no fees charged



Deposits with City and County Treasurer  
Classified by Funds

NATURE OF DEPOSITS

General Fund

|                                |              |  |
|--------------------------------|--------------|--|
| Street space and sub-sidewalks | \$ 20,190.00 |  |
| House moving                   | 2,100.00     |  |
| Side sewers                    | 105,257.85   |  |
| Plans                          | 5,550.00     |  |

|             |                 |           |
|-------------|-----------------|-----------|
| Surveys     | \$ 5,541.00     |           |
| Inspections | <u>7,945.00</u> | 13,486.00 |

|             |                 |           |
|-------------|-----------------|-----------|
| Excavations |                 |           |
| Deposits    | \$ 555.50       |           |
| Fees        | <u>2,514.50</u> | 10,070.00 |

|             |  |        |
|-------------|--|--------|
| Advertising |  | 323.06 |
|-------------|--|--------|

|                            |  |        |
|----------------------------|--|--------|
| Side sewers - excess costs |  | 528.12 |
|----------------------------|--|--------|

|                              |               |           |
|------------------------------|---------------|-----------|
| Fees -                       |               |           |
| Building permits             | \$ 56,018.90  |           |
| Billboards                   | 614.00        |           |
| Street space                 | 6,498.70      |           |
| House numbers                | 3,516.00      |           |
| House moving                 | 42.00         |           |
| Boiler installations         | 632.00        |           |
| Boiler inspections           | 209.00        |           |
| Flue registrations           | 380.00        |           |
| Flues - new buildings        | 2.50          |           |
| "    old buildings           | 126.00        |           |
| "    new buildings (coupons) | 687.50        |           |
| "    old buildings (coupons) | <u>180.00</u> | 68,906.60 |

|                                |  |          |
|--------------------------------|--|----------|
| Sidewalk Flower Markets - fees |  | 1,512.00 |
|--------------------------------|--|----------|

|                                        |  |          |
|----------------------------------------|--|----------|
| Street Improvement Fund                |  | 144.90   |
| Street Improvement Fund (Ord. of 1934) |  | 4,254.48 |

Miscellaneous Funds

|                                    |              |            |
|------------------------------------|--------------|------------|
| State Highway Trust                | \$124,383.14 |            |
| Special Road Improvement           | 4,672.96     |            |
| General                            | 3,086.30     |            |
| Special Gas Tax Street Improvement | 470,959.62   |            |
| Municipal Railway Operating        | 2,187.90     |            |
| 1942 Fire Protection Bond          | <u>36.00</u> | 605,325.92 |

|                                               |  |                   |
|-----------------------------------------------|--|-------------------|
| Total deposits with City and County Treasurer |  | <u>837,648.93</u> |
|-----------------------------------------------|--|-------------------|

Classification of Building Permits Issued

| <u>Class</u>     | <u>No. of<br/>Permits</u> | <u>Estimated<br/>Cost</u> | <u>Fees</u> |
|------------------|---------------------------|---------------------------|-------------|
| A                | 6                         | \$ 282,945                |             |
| B                | 1                         | 14,500                    |             |
| C                | 20                        | 1,114,785                 |             |
| Frames           | 1,345                     | 6,086,520                 |             |
| Alterations      | 3,081                     | 3,251,176                 |             |
| Public           | -                         | -                         |             |
| U. S. Government | -                         | -                         |             |
| Totals           | 4,453                     | \$10,749,926              | \$56,018.90 |

Flue Registrations and Permits

|                               |           |               |
|-------------------------------|-----------|---------------|
| Flue Registrations            | 19        | \$ 380.00     |
| *Coupon Books - new buildings | 55        | 687.50        |
| ** " " old buildings          | 9         | 180.00        |
| Flue Permits new buildings    | 5         | 2.50          |
| " " old buildings             | <u>63</u> | <u>126.00</u> |
| Totals                        | 151       | \$1,376.00    |

Miscellaneous Permits

|                            |          |               |
|----------------------------|----------|---------------|
| To raze structures         | 34       | -             |
| To move buildings          | 21       | 42.00         |
| Boiler installations       | 146      | 632.00        |
| Boiler inspection requests | <u>8</u> | <u>209.00</u> |
| Totals                     | 209      | 883.00        |

GRAND TOTALS                      4,813                      \$58,277.90

\*New coupon books contain  
25 prepaid coupons

\*\*Old coupon books contain  
10 prepaid coupons

TOTAL NUMBER OF BUILDING APPLICATIONS RECEIVED                      -                      4,940

BUREAU OF BUILDING INSPECTION

John C. Little, Superintendent

The Bureau examines and reports on all plans and applications for building permits issued by the Department of Public Works, inspects the building work as it progresses, makes a final inspection, and issues Certificates of Final Completion. One building inspector is in charge of general plan checking, assignment of duties, and public relations. Structural engineers check all stresses and designs pertaining to structural engineering. One building inspector directs the field and office work of all building inspectors. Other building inspectors work in their respective districts.

The personnel includes the following classifications:

- 1 Superintendent
- 10 Building inspectors
- 1 Boiler inspector
- 1 Structural engineer
- 2 Clerk-stenographers

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Typical one-family detached dwellings



Typical two-family dwellings on 25-ft. lots  
Sunset District

Buildings are divided into the following classifications:

- Class A building - Steel frame, fire-proof building
- Class B building - Reinforced concrete, fire-proof building
- Class C building - Brick or concrete buildings with wood floor joists and wood studs, and other combustible interior construction
- Frame building - Exterior and interior walls - wood

Within the boundary known as the "fire limits" in the downtown and near downtown districts, all new buildings must be of Class A, B, or C. Frame building construction is permitted outside of the fire limits only.

Applications for building permits were approved for construction in the various classifications with estimated cost as follows:

| <u>Class</u>       | <u>Number<br/>of Permits</u> | <u>Cost</u>  |
|--------------------|------------------------------|--------------|
| A                  | 6                            | \$ 282,945   |
| B                  | 1                            | 14,500       |
| C                  | 20                           | 1,114,785    |
| Frame construction | 1345                         | 6,086,520    |
| Alterations        | 3081                         | 3,251,176    |
| Totals -           | 4453                         | \$10,749,926 |

Building construction during the past year was carried on under the restrictions imposed by war conditions. Private residential construction was limited to homes built under Title VI of the Federal Housing Act, the Home Owners Loan Act and the Veterans Act.

The floor area of standard one-family dwellings, which previously was limited to 800 square feet, was increased successively to 900 and 1,000 square feet; the construction of two-family dwellings known as flats, discontinued during the first war years, was again permitted. Many existing buildings, sometimes quite dilapidated, were rehabilitated under the Home Owners Loan Act and additional housing units were thus made available.

Due to the scarcity of lumber and metal products, some requirements of the regular building code regarding the use of these materials were relaxed in accordance with emergency wartime building ordinances. Although it has been frequently amended, the present building code, originally enacted in 1906, has now become obsolete. In order that a revised building code may be printed, an appropriation of \$5,000 will be provided in the 1945-46 budget.

The superintendent of the Bureau attended and took an active part in many of the meetings of the Pacific Coast Buildings Officials Conference.

The following report covers the activities for the past year:

|                                                                                                                                 |        |
|---------------------------------------------------------------------------------------------------------------------------------|--------|
| Number of inspections reported by inspectors of buildings                                                                       | 32,326 |
| Number of projects remaining on which permits have been issued that have not been reported completed by inspectors of buildings | 2,133  |
| Number of complaints that have been reported adjusted by inspectors of buildings                                                | 418    |

|                                                                                                                               |       |
|-------------------------------------------------------------------------------------------------------------------------------|-------|
| Number of inspections reported by inspectors of boilers                                                                       | 1,231 |
| Number of projects remaining on which permits have been issued that have not been reported completed by inspectors of boilers | 5     |
| Number of complaints and requests for information recorded                                                                    | 129   |
| Number of complaints and requests on which initial inspections have been reported                                             | 89    |
| Number of applications for permits examined and approved by structural engineers                                              | 2,597 |
| Number of applications for permits pending                                                                                    | 70    |



Typical one-family dwellings on 25-ft. lots

BUREAU OF ARCHITECTURE

Dodge A. Riedy, City Architect

The Bureau prepares preliminary designs, plans, specifications, and construction cost estimates for municipal buildings and other City-owned structures and supervises alterations and repair work on contracts in excess of \$1000 for the Board of Education, Department of Health, Fire Department, Police Department, Sheriff, Public Welfare Department, Juvenile Court, Department of Electricity, and for all other property under the jurisdiction of the Department of Public Works, such as Repair Shops, Yards, City Hall, Hall of Justice, Civic Auditorium, California Palace of the Legion of Honor, and M. H. de Young Memorial Museum.

Private architects employed by the Director of Public Works to prepare plans and specifications for municipal buildings are under the direction of the City Architect.

During the year the work consisted of alterations, repairs, and maintenance work to public buildings, interior and exterior painting of school buildings. In addition, the following construction work was completed: 17 prefabricated classrooms, an office, and two toilets at Lake Merced School; 20 portable frame classrooms at Ridge Point School, Units Nos. 1, 2, and 3; 13 portable frame classrooms at Candlestick Cove, Unit No. 4; two additional prefabricated classrooms, two kindergartens, an office, and an auditorium at Ulloa School; alterations were made to the Good Samaritan Community Center and the Excelsior School to provide facilities for the care of small children during working hours of mothers employed in defense activities; lighting systems for all portable frame classrooms; and a new recreation hall and dormitory at Log Cabin Ranch.

The tabulations given herewith show type of work and cost of each contract.

Board of Education

Contract work completed on the following school buildings:

|                                                                                            |             |
|--------------------------------------------------------------------------------------------|-------------|
| Balboa High                                                                                |             |
| Lunch room - alterations                                                                   | \$ 7,265.70 |
| "      "      hardware for rolling doors                                                   | 232.50      |
| Edison                                                                                     |             |
| Auditorium yard entrances - alterations                                                    | 1,519.00    |
| Francis Scott Key                                                                          |             |
| Original school - repairs                                                                  | 27,441.47   |
| Hancock                                                                                    |             |
| Wrought iron fence - repairs                                                               | 1,142.00    |
| High School of Commerce                                                                    |             |
| Gymnasium floors - repairs                                                                 | 989.60      |
| John Swett Junior High                                                                     |             |
| Girls' gymnasium, shower room and lunch room - alterations                                 | 25,035.54   |
| Laguna Honda                                                                               |             |
| Roof repairs                                                                               | 1,827.00    |
| Le Conte                                                                                   |             |
| Lunch room - alterations                                                                   | 9,635.75    |
| "      "      flue                                                                         | 105.00      |
| Lowell High                                                                                |             |
| Roof repairs                                                                               | 1,398.00    |
| Fireproofing                                                                               | 773.00      |
| Pacific Heights                                                                            |             |
| Roof of play yard - repairs                                                                | 6,490.00    |
| Parkmerced                                                                                 |             |
| 15 Portable frame classrooms                                                               | 94,640.00   |
| Fire hose cabinets and racks                                                               | 775.00      |
| Furnishing and installing conduit for thermostat wiring to the safety pilot cut-off valves | 156.00      |
| Polytechnic High                                                                           |             |
| Composition roofs - repairs                                                                | 7,475.41    |
| Girls' gymnasium, exterior walls - waterproofing                                           | 3,060.00    |
| Redding                                                                                    |             |
| Roof repairs                                                                               | 10,990.00   |
| Ulloa                                                                                      |             |
| Prefabricated classrooms                                                                   | 62,583.61   |
| Washington Grammar                                                                         |             |
| Repairs                                                                                    | 1,806.54    |





Parkmerced School

|                                                                                                             |             |
|-------------------------------------------------------------------------------------------------------------|-------------|
| Warehouse - Board of Education                                                                              |             |
| Alterations for basement                                                                                    | \$17,999.00 |
| Replacement and repairs of blackboards,<br>bulletin boards and pinning spaces<br>for the following schools: |             |
| Sherman                                                                                                     |             |
| John Muir                                                                                                   |             |
| Dudley Stone                                                                                                |             |
| Parkside                                                                                                    | 31,698.00   |
| Ridge Point - Units 1, 2, & 3                                                                               |             |
| 20 Portable frame classrooms                                                                                | 117,444.00  |
| Asphaltic concrete wearing surface<br>on school yard                                                        | 11,953.90   |
| Candlestick Cove, Unit 4                                                                                    |             |
| 13 Portable classrooms                                                                                      | 51,511.00   |
| Asphaltic concrete wearing surface<br>on school yard                                                        | 3,250.00    |
| Child Care Centers                                                                                          |             |
| Good Samaritan Community - alterations                                                                      | 1,000.00    |
| Excelsior - alterations                                                                                     | 3,977.00    |

#### Painting Work - School Buildings

|                                              |           |
|----------------------------------------------|-----------|
| <u>Exterior</u>                              |           |
| Bryant                                       | 5,147.00  |
| Galileo High - gymnasium & athletic<br>field | 16,658.00 |
| Glen Park                                    | 3,282.00  |
| Lafayette                                    | 4,375.00  |
| Lawton                                       | 2,926.50  |
| Mission High                                 | 5,824.00  |
| Sanchez                                      | 3,447.00  |
| Spring Valley                                | 4,410.00  |
| Sunnyside                                    | 3,900.00  |
| Ulysses S. Grant                             | 3,380.00  |
| Visitation Valley                            | 3,290.00  |
| <u>Interior</u>                              |           |
| Dudley Stone                                 | 9,875.00  |
| <u>Exterior and Interior</u>                 |           |
| Everett Jr. High                             | 8,250.00  |
| Hancock                                      | 5,800.00  |
| Bay View                                     | 10,960.00 |
| Roosevelt Junior High                        | 6,415.00  |
| Redding                                      | 18,762.00 |
| High School of Commerce                      | 7,857.50  |

#### Electrical work for lighting systems in portable frame classrooms as follows:

Abraham Lincoln High  
Bret Harte Elementary  
Burnett  
Daniel Webster  
Franklin  
Fremont

Grattan  
 Hillcrest  
 Laguna Honda  
 Lawton  
 Lincoln  
 Miraloma  
 Parkside  
 San Miguel  
 Sunnyside  
 Ulloa  
 Visitacion Valley  
 Washington Irving  
 Winfield Scott

|       |             |              |
|-------|-------------|--------------|
|       | \$11,435.00 |              |
| Total |             | \$640,268.02 |

Department of Health

San Francisco Hospital

|                                                                                            |             |
|--------------------------------------------------------------------------------------------|-------------|
| Receiving Building Ward "R" and Ward<br>Building #1 - alterations and<br>additions         | \$ 4,441.00 |
| Wood sash and brick enclosures                                                             | 4,064.00    |
| Waterproofing of exterior brick walls                                                      | 1,800.00    |
| Weather-stripping of windows                                                               | 6,850.00    |
| Replacement of the cold and hot water<br>piping systems for the main group<br>of buildings | 116,625.11  |
| Interior painting of main corridor                                                         | 2,894.34    |

Health Center Building

|                                   |              |
|-----------------------------------|--------------|
| Painting of the corridors         | 3,613.00     |
| Acoustical tile, Rooms 100 & 200B | 349.00       |
| Total                             | \$140,636.45 |

Fire Department

|                                               |             |
|-----------------------------------------------|-------------|
| Truck House #2<br>Waterproofing and repairs   | \$ 5,244.00 |
| Engine House #13<br>Repairs                   | 1,848.00    |
| Engine House #45<br>Waterproofing and repairs | 2,726.00    |
| Engine House #48<br>Waterproofing and repairs | 4,405.00    |
| Total                                         | 14,223.00   |

Police Department

|                                      |               |             |
|--------------------------------------|---------------|-------------|
| Southern Police Station              |               |             |
| Addition to motor-cycle garage       | \$18,730.00   |             |
| Central Police Station and Accident  |               |             |
| Prevention Bureau - repairs          | 2,117.00      |             |
| North End Police Station for the San |               |             |
| Francisco Police Juvenile Bureau -   |               |             |
| repairs                              | 5,688.00      |             |
| City Prison - Hall of Justice        |               |             |
| Installation of additional bunks     | <u>592.00</u> |             |
| Total                                |               | \$27,127.00 |

Sheriff

|                                     |               |          |
|-------------------------------------|---------------|----------|
| San Francisco County Jail #2        |               |          |
| <u>San Mateo County</u>             |               |          |
| Painting of exterior sash           | \$ 3,447.00   |          |
| Repairing of steel water tank       | 875.00        |          |
| Setting additional oil tank         | 597.00        |          |
| San Francisco Women's Jail #4       |               |          |
| Repairing hot water storage heaters |               |          |
| and concrete work                   | 1,983.00      |          |
| San Francisco Men's Jail #2         | <u>990.00</u> |          |
| Total                               |               | 7,892.00 |

Juvenile Court

|                                         |                  |             |
|-----------------------------------------|------------------|-------------|
| <u>Juvenile Detention Home</u>          |                  |             |
| Boiler installation                     | \$4,643.00       |             |
| Repairing steel sash hardware           | 1,176.00         |             |
| Installation of steel bars on windows   | 432.00           |             |
| Chain link fence                        | 527.00           |             |
| Log Cabin Ranch for Boys                |                  |             |
| <u>La Honda, San Mateo County</u>       |                  |             |
| Temporary recreation hall and dormitory | <u>15,814.00</u> |             |
| Total                                   |                  | \$22,592.00 |

City Hall

|                                                                                         |                 |             |
|-----------------------------------------------------------------------------------------|-----------------|-------------|
| Mayor's Office                                                                          |                 |             |
| Addition to rail                                                                        | \$              | 300.00      |
| Room 357A                                                                               |                 |             |
| Wood and glass partitions                                                               |                 | 889.00      |
| Room 417                                                                                |                 |             |
| Acoustical tile                                                                         |                 | 771.00      |
| Reproduction Division                                                                   |                 |             |
| Cabinet work                                                                            |                 | 948.00      |
| Storage lockers at the northwest and south-<br>west corners of second floor stair halls |                 | 251.00      |
| Controller's Payroll Division                                                           |                 |             |
| <u>Basement, City Hall</u>                                                              |                 |             |
| Carpentry, millwork and painting                                                        | 1,200.00        |             |
| Kompolith flooring                                                                      | 895.00          |             |
| Acoustic treatment                                                                      | 1,777.00        |             |
| Air conditioning equipment                                                              | 6,739.48        |             |
| Electrical work                                                                         | <u>2,150.35</u> |             |
| Total                                                                                   |                 | \$15,920.83 |

M. H. de Young Memorial Museum

|                                  |                 |           |
|----------------------------------|-----------------|-----------|
| Rebuild large east wing skylight | \$12,570.00     |           |
| Painting of skylights            | <u>3,083.40</u> |           |
| Total                            |                 | 15,653.40 |

California Palace of the Legion of Honor

|             |  |        |
|-------------|--|--------|
| Alterations |  | 637.00 |
|-------------|--|--------|

Miscellaneous

|                                    |    |                     |
|------------------------------------|----|---------------------|
| Farmers' Market                    |    |                     |
| Office and toilet rooms            | \$ | 2,455.00            |
| San Francisco Hospitality House    |    |                     |
| Civic Center - painting            |    | 1,947.00            |
| Civic Center and Hamilton Square   |    |                     |
| Dormitories - exterior painting    |    | 2,947.00            |
| Auto Shop No. 1                    |    |                     |
| Roof repairs                       |    | 2,411.00            |
| Auxiliary Fire House               |    |                     |
| Northeast corner Ulloa & 30th Ave. |    |                     |
| (Sold to highest bidder for \$36)  |    |                     |
| Total                              |    | <u>9,760.00</u>     |
| Grand total                        |    | <u>\$804,709.70</u> |

BUREAU OF SEWER REPAIR

Emile F. Muheim, Superintendent

The Bureau is responsible for the cleaning and repair of main sewers, side sewers, manholes, catch basins, and the cleaning of sumps at all sewage pumping stations.

The personnel includes the following classifications:

|       |    |                           |
|-------|----|---------------------------|
|       | 1  | Superintendent            |
|       | 2  | Assistant superintendents |
|       | 2  | General foremen           |
|       | 22 | Main sewer cribbers       |
| 10 to | 20 | Side sewer cribbers       |
|       | 7  | Bricklayers               |
|       | 12 | Hod carriers              |
|       | 17 | Sewer cleaners            |
|       | 19 | Laborers                  |
|       | 16 | Truck drivers             |
|       | 1  | Engineering inspector     |
|       | 1  | Clerk                     |
|       | 2  | Compressor operators      |



Typical sewer break

To provide adequate service for the public, general maintenance and emergency repairs, the field crews are employed eight hours per day, Monday through Friday. Throughout the rainy season an emergency force is on duty from five P.M. to one A.M. on weekdays throughout the year, and from four P.M. until twelve midnight on Saturdays, Sundays, and holidays.

During the past year 412 main sewer breaks were repaired, 809 side sewers were constructed or repaired, 6875 complaints were investigated and adjusted.

Four eductors and one air compressor are the only pieces of equipment owned and operated by the City. Five dump trucks for handling material, and five trucks for sewer maintenance are operated on a contract basis. Four new eductors and four new Mack trucks will be in service the latter part of the year.



Typical sewer break

SEWER REPAIR COSTS

| <u>Repair to sewers</u>                            | <u>Labor</u> | <u>Material</u> | <u>Trucks</u> | <u>Total</u>                    |
|----------------------------------------------------|--------------|-----------------|---------------|---------------------------------|
| Brick sewers                                       | \$34,444.30  | \$ 3,924.63     | \$1,377.04    | \$ 39,745.97                    |
| Pipe sewers                                        | 70,153.12    | 12,650.27       | 8,386.05      | 91,189.44                       |
| Concrete sewers                                    | 4,005.75     | 467.07          | 338.83        | 4,811.65                        |
| Building manholes & catchbasins                    | 17,234.99    | 4,395.30        | 1,848.56      | 23,478.85                       |
| Repairs to catchbasins                             | 11,661.92    | 1,999.88        | 1,211.47      | 14,873.27                       |
| Repairs to manholes                                | 2,884.81     | 994.24          | 217.42        | 4,096.47                        |
| <u>Cleaning sewers &amp; catchbasins</u>           |              |                 |               |                                 |
| Hand cleaning catchbasins                          |              |                 |               |                                 |
| (688 cu. yds. silt removed)                        | 8,668.17     | 527.13          | 699.36        | 9,894.66                        |
| Sewer cleaning                                     |              |                 |               |                                 |
| (1,868.50 cu. yds. silt removed)                   | 38,916.05    | 3,591.23        | 2,329.01      | 44,836.29                       |
| <u>Eductors</u>                                    |              |                 |               |                                 |
| Catchbasin cleaning                                |              |                 |               |                                 |
| (4777 cu. yds. silt removed)                       | 14,686.50    | 936.99          |               | 15,623.49                       |
| Main sewers                                        | 8,587.23     | 562.20          |               | 9,149.43                        |
| Shop work                                          | 980.85       | 60.51           |               | 1,041.36                        |
| <u>Sewer Flushing, Inspections and Maintenance</u> |              |                 |               |                                 |
| Flushing                                           |              |                 |               |                                 |
| Breaks                                             | 6,236.96     | 460.10          | 3,021.38      | 9,718.44                        |
| Side sewers                                        | 1,669.32     | 121.39          | 819.11        | 2,609.82                        |
| Main sewers                                        | 4,898.47     | 363.35          | 2,380.53      | 7,642.35                        |
| Manhole covers                                     | 10,730.69    | 777.49          | 5,217.61      | 16,725.79                       |
| Catchbasin covers                                  | 312.45       | 22.96           | 153.21        | 488.62                          |
| Wet downs                                          | 229.99       | 16.59           | 110.47        | 357.05                          |
| Cleaning catchbasins                               | 2,233.96     | 163.79          | 1,082.63      | 3,480.38                        |
| Barricades                                         | 1,920.80     | 144.86          | 944.88        | 3,010.54                        |
| Miscellaneous*                                     | 6,650.82     | 486.31          | 3,209.79      | 10,326.92                       |
| 4 Mack trucks and eductors on order                | 10,361.54    | 1,387.60        | 2,895.71      | 14,644.85                       |
|                                                    |              |                 |               | 61,112.40                       |
|                                                    |              |                 |               | <u>Grand total \$388,858.04</u> |

\*Yard service, fill at various locations, sewage pumping station cleanup, D.P.W. orders, test holes, etc.



BUREAU OF STREETS

P. W. King, General Superintendent

The maintenance of streets and boulevards within the City and County, including repair work on State Highways, and also the operation and maintenance of the Third Street, Fourth Street, and Islais Creek bridges, are under the supervision of this Bureau. Many worn-out street surfaces were repaved with asphalt wearing surface; repairs were made to brick, basalt block, and concrete pavements. New concrete gutters, sidewalks, and curbing were constructed in many sections of the City. Several temporary roads were built. Pavement cracks which had developed on many major streets were cleaned and filled with emulsified asphalt, gravel, or sand. One asphalt crew is assigned to the municipal railway for resurfacing street car track areas.



O'Shaughnessy Boulevard Slide



Removing sand drifts from roadway

The program for planing the bituminous surfaces of streets and boulevards continued throughout the year.

The municipally owned asphalt plant was shut down May 14th to July 2d while new belt bucket material elevating equipment was being installed. During the period the asphalt plant was shut down, 1255.5 tons of asphalt concrete materials were purchased under bid from the Pacific Pavements Company.

Miscellaneous work included the removal of sand drifts from paved streets in the Sunset and Parkside districts. Earth slides which had encroached upon the roadways of boulevards and streets were cleared away. Along Lake Merced Boulevard, ice plant was trimmed away from gutters, and rocks were cleared from adjacent equestrian paths.

Personnel

(Exclusive of bridges and asphalt plant)

|              |                                                   |
|--------------|---------------------------------------------------|
| Supervisory: | 1 Superintendent, 1 Supervisor, 2 General foremen |
| Per diem:    | 1 Foreman asphalt finisher      2 Pavers          |
|              | 8 Sub-foremen asphalt finishers      2 Rammers    |
|              | 11 Asphalt finishers      4 Granite cutters       |
|              | 33 Asphalt workers      2 H & P engineers         |
|              | 3 Cement finishers      17 Chauffeurs             |
|              | 5 Cement finishers' helpers      35 Laborers      |
|              | 2 Watchmen      2 Foreman laborer                 |

The above per diem personnel is distributed in crews as follows:

|                                  |                                |
|----------------------------------|--------------------------------|
| Crack sealing                    | 1 Sub-foreman asphalt finisher |
|                                  | 2 Chauffeurs                   |
|                                  | 6 Laborers                     |
| Municipal Railway<br>(Full time) | 1 Sub-foreman asphalt finisher |
|                                  | 2 Laborers                     |
|                                  | 14 Asphalt workers             |
|                                  | 2 Chauffeurs                   |
| Municipal Railway<br>(Part time) | 1 Sub-foreman asphalt finisher |
|                                  | 2 Asphalt finishers            |
|                                  | 4 Asphalt workers              |
|                                  | 1 Chauffeur                    |

The remainder of the asphalt crews repair pavements on highways and major streets, repave over main and side sewers, etc

|                                                                                      |                                |
|--------------------------------------------------------------------------------------|--------------------------------|
| Broken and depressed curbs                                                           | 2 Curb setters                 |
|                                                                                      | 4 Laborers                     |
| Cutting and repairing curbs<br>at yard                                               | 2 Granite cutters              |
| Sidewalks and angular corners                                                        | 3 Cement finishers             |
|                                                                                      | 5 Cement finishers' helpers    |
|                                                                                      | 1 Chauffeur                    |
| Work on unaccepted streets                                                           | 1 Chauffeur (tractor operator) |
| Corporation yard                                                                     | 2 Laborers                     |
| Clean-up gangs: Removing<br>slides and debris from<br>sewers; unloading sand<br>cars | 2 Chauffeurs                   |
|                                                                                      | 12 Laborers                    |
| Brick and basalt block paving                                                        | 2 Pavers                       |
|                                                                                      | 2 Rammermen                    |
| Pavement cutting                                                                     | 2 Chauffeurs                   |
|                                                                                      | 4 Jackhammer men (laborers)    |

Municipal Asphalt Plant

Personnel: 1 Foreman                      2 Asphalt workers  
               1 Dryerman                1 Engineer  
               1 Mixerman                1 Asphalt worker (Night man for  
                                                                  boiler room)

Output and Cost of Operation

|               | <u>Output<br/>Tons</u> | <u>Cost<br/>Labor and Materials</u> | <u>Cost<br/>Per ton</u> |
|---------------|------------------------|-------------------------------------|-------------------------|
| July, 1944    | 1232.40                | \$ 4,390.22                         | \$3.562                 |
| August        | 2039.20                | 6,190.69                            | 3.036                   |
| September     | 1078.80                | 4,284.48                            | 3.971                   |
| October       | 1598.15                | 5,374.31                            | 3.362                   |
| November      | 1582.05                | 5,314.39                            | 3.359                   |
| December      | 1184.70                | 4,516.09                            | 3.812                   |
| January, 1945 | 1528.00                | 5,154.34                            | 3.373                   |
| February      | 1204.15                | 4,549.65                            | 3.778                   |
| March         | 1399.05                | 5,368.28                            | 3.837                   |
| April         | 1210.55                | 4,994.22                            | 4.126                   |
| May           | 376.50                 | 1,926.70                            | 5.117                   |
| June          | -                      | -                                   | -                       |
|               | <u>14433.55</u>        | <u>\$52,063.37</u>                  | <u>3.758 (Avg)</u>      |

Departmental Services

| <u>Asphalt Surfacing</u> | <u>Square Feet</u> | <u>Cost<br/>(Labor &amp; Materials)</u> |
|--------------------------|--------------------|-----------------------------------------|
| Major streets            | 351,664            | \$ 23,925.75                            |
| Municipal Railway        | 278,676            | 41,618.46                               |
| Side sewers              | 29,243             | 11,881.12                               |
| State Highway, Route #2  | 27,482             | 2,513.15                                |
| State Highway, Route #68 | 16,787             | 2,295.09                                |
| Schools - yards          | 191,285            | 9,681.33                                |
| Building Repair          | 6,978              | 606.48                                  |
| Recreation               | 10,500             | 578.74                                  |
| Golden Gate Park         | 69,530             | 2,863.48                                |

Miscellaneous

|                                        |                 |
|----------------------------------------|-----------------|
| San Francisco Junior College - grading | 350.84          |
| Guadalupe School yard - crack sealing  | 74.94           |
| Police Department                      | 74.70           |
| Building Repair                        | 133.66          |
| Controller                             | 64.08           |
| Civilian Defense                       | 298.20          |
| Main sewers - 1719.93 tons of sand     | <u>1,957.92</u> |

Total - \$ 98,917.34

General Repairs

Cost of  
Labor & Material

|                                             |           |                |                     |
|---------------------------------------------|-----------|----------------|---------------------|
| Repairs to asphalt pavements                | 1,078,179 | sq.ft.         | \$114,224.73        |
| Brick pavement repairs                      | 14,116    | " "            | 7,711.88            |
| Concrete pavement repairs                   | 8,703     | " "            | 4,333.19            |
| Basalt " "                                  | 1,424     | " "            | 711.56              |
| Crack sealing                               | 458,852   | lin.ft.        | 8,526.27            |
| Granite curb redressed                      | 4,521     | " "            | 7,137.91            |
| " " reset                                   | 16,228    | " "            | 17,586.59           |
| Concrete curbs                              | 7,010     | " "            | 5,765.29            |
| Sidewalks, concrete                         | 75,386    | sq. ft.        | 24,714.77           |
| Main sewers paved, including debris removal | 34,778    | " "            | 16,840.77           |
| Department of Electricity                   | 166       | " "            | 53.51               |
| Fire Department                             | 482       | " "            | 183.09              |
| Traffic "Duck bumps"                        | 140       | made           | 131.55              |
| " " "                                       | 56        | set            | 258.15              |
| Fourth Street Bridge                        |           | Gravel ballast | 25.32               |
| Asphalt Plant Repairs                       |           |                | 2,351.66            |
| Tires                                       |           |                | 39.47               |
| Miscellaneous purchases                     |           |                | 10,871.20           |
| Temporary roads                             |           |                | 7,767.95            |
| *Miscellaneous work                         |           |                | 43,384.17           |
|                                             |           |                | <u>\$272,619.03</u> |

\*Miscellaneous Work

|            | <u>Labor</u>       | <u>Equipment</u>  | <u>Materials</u> | <u>Overhead</u>   | <u>Totals</u>      |
|------------|--------------------|-------------------|------------------|-------------------|--------------------|
| July, 1944 | \$ 1,005.82        | \$ 267.69         | \$ 69.83         | \$ 154.44         | \$1,497.78         |
| Aug        | 1,582.10           | 304.13            | 114.21           | 236.91            | 2,237.35           |
| Sept       | 1,458.91           | 219.49            | 43.70            | 252.06            | 1,974.16           |
| Oct        | 2,607.43           | 466.14            | 41.30            | 414.56            | 3,529.43           |
| Nov        | 4,416.63           | 648.99            | 46.43            | 813.10            | 5,925.15           |
| Dec        | 4,771.44           | 616.72            | 69.72            | 634.58            | 6,092.46           |
| Jan 1945   | 2,454.68           | 233.22            | 64.33            | 365.79            | 3,118.02           |
| Feb        | 3,727.71           | 588.99            | 269.32           | 675.97            | 5,261.99           |
| Mar        | 2,403.02           | 339.59            | 23.79            | 365.34            | 3,131.74           |
| Apr        | 1,829.56           | 208.17            | 142.96           | 306.50            | 2,487.19           |
| May        | 3,423.45           | 363.94            | 31.54            | 645.80            | 4,464.73           |
| June       | 2,725.50           | 432.94            | 51.24            | 454.49            | 3,664.17           |
|            | <u>\$32,406.25</u> | <u>\$4,690.01</u> | <u>\$968.37</u>  | <u>\$5,319.54</u> | <u>\$43,384.17</u> |

The above costs are for the following miscellaneous work:  
 Twin Peaks Boulevard - cleaning drainage gutters.  
 After heavy winter storms, trees and debris were carted away, and spillways at various locations throughout the City were cleaned.  
 Around Lake Merced Boulevard, ice plant was removed from the gutters, and equestrian paths along the boulevard were swept clean of rocks.  
 The regular maintenance program of cleaning and repairing City-owned stairways was continued throughout the year.  
 Debris was removed from the asphalt plant and curb yard.  
 Clearing of sand drifts from the roadways of many streets in the Sunset and Parkside districts.  
 Removal of earth slides from roadways of streets and highways in various sections of the City.  
 Dust control for Farmers Market.

Bituminous Street Surfaces Planed

| <u>Contract No. 7</u>                                       | <u>Sq. Ft.</u> | <u>Cost</u> |
|-------------------------------------------------------------|----------------|-------------|
| Donohue St., Innes Ave. to Galvez Ave.                      |                |             |
| Evans Ave., Third to Mendell St.                            |                |             |
| Ellis St., Van Ness Ave. to Divisadero St.                  |                |             |
| Fulton St., Arguello Blvd. to Funston Ave.                  |                |             |
| Tenth Ave., Fulton to Geary St.                             |                |             |
| Seventh Ave., Fulton to Lake St.                            |                |             |
| Fourth Ave., Lake to Geary St.                              |                |             |
| Mission St., 11th to Spear St.                              | 972,840        | \$12,304.11 |
| <u>Contract No. 8</u>                                       |                |             |
| Mission St., Second to Spear St.                            |                |             |
| Grove St. at Van Ness Avenue                                |                |             |
| Gough St., Hayes to Turk St.                                |                |             |
| Steiner St., Golden Gate Ave. to Post St.                   |                |             |
| Pierce St., Fulton to Turk St.                              |                |             |
| Parker Ave., Fulton St. to Turk St.                         |                |             |
| Monterey Blvd., Plymouth Ave. to Santa Clara Ave.           |                |             |
| Yerba Buena Ave., Santa Clara Ave. to Miraloma Drive        |                |             |
| St. Elmo Way, Yerba Buena Ave. to Monterey Blvd.            |                |             |
| Santa Clara Ave., Monterey Blvd. to Portola Dr.             |                |             |
| St. Francis Blvd., San Anselmo Ave. to Junipero Serra Blvd. |                |             |
| Funston Ave., Fulton to Lake St.                            |                |             |
| Fourteenth Ave., Fulton to Lake St.                         |                |             |
| Seventh Ave., Lake St. to Presidio Wall                     |                |             |
| Lyon St., Fell to Fulton St.                                |                |             |
| Castro St., 16th St. to Duboce Ave.                         |                |             |
| Fifteenth St., Castro to Market St.                         |                |             |
| Noe St., Market St. to Duboce Ave.                          |                |             |
| South Van Ness Ave., 14th to 18th St.                       |                |             |
| Eighteenth St., Harrison to Guerrero St.                    |                |             |
| Fourteenth St., Harrison to Valencia St.                    |                |             |
| Seventeenth St., Florida to Kansas St.                      |                |             |
| Vermont St., 16th to 17th St.                               |                |             |
| Valencia St., 14th to 26th St.                              |                |             |
| Twenty-fourth St., Kansas St. to South Van Ness Ave.        |                |             |
| Guerrero St., 14th St. to San Jose Ave.                     |                |             |
| Fourteenth St., Guerrero to Valencia St.                    |                |             |
| Sixteenth St., Church St. to South Van Ness Avenue          |                |             |
| Fifteenth St., Market to Folsom St.                         |                |             |
| Mission St., 14th to Randall St.                            |                |             |
| Nineteenth St., Guerrero to Folsom St.                      |                |             |
| Twenty-first St., Dolores to Harrison St.                   |                |             |
| Harrison St., 20th to 21st St.                              |                |             |
| Twenty-second St., Harrison to Dolores St.                  |                |             |
| Cortland Ave., Mission to Folsom St.                        |                |             |
| Gates St., Cortland Ave. to Eugenia Ave.                    |                |             |
| Andover St., Crescent Ave. Northerly                        | 3,399,311      | \$39,884.44 |

Contract No. 9Sq. Ft.Cost

Golden Gate Ave., Masonic to Taylor St.  
 Taylor St., Market St. to Post St.  
 Polk St., Grove to McAllister St.  
 Seventeenth St., Stanyan to Cole St.  
 California St., Arguello Blvd. to Hyde St.  
 Divisadero St., Clay to Waller St.  
 Columbus Ave., Pacific Ave. to Vallejo St.  
 Eleventh St., Market to Bryant St.  
 Broadway, Van Ness Ave. to Hyde St.  
 Broadway, Powell to Davis St.  
 Folsom St., Third to Fremont St.  
 Mission St., 20th to 25th St.

1,467,672      \$21,118.24

Totals - 5,839,823      \$73,306.79

Unit cost .0125 per square foot



Asphalt and maintenance truck

Bridges

Personnel:           1 Chief engineer  
                   10 Operating engineers  
                   1 Relief engineer  
                   10 Watchmen  
                   1 Relief watchman

Cost of Operation:   Third Street   \$26,201.90  
                       Fourth Street   25,848.26  
                       Sixth Street     68.25  
                       Islais Creek    23,934.41

|                       |                    |
|-----------------------|--------------------|
| Salaries and wages    | \$67,619.82        |
| Retirement            | 3,827.27           |
| Power                 | 2,306.78           |
| Miscellaneous charges | 2,298.95           |
| Total                 | <u>\$76,052.82</u> |

SUMMARY

|                       |                     |
|-----------------------|---------------------|
| Asphalt plant         | \$ 52,063.37        |
| Departmental services | 95,963.60           |
| General repairs       | 272,619.03          |
| Miscellaneous work    | 2,954.34            |
| Heater-planer work    | 73,306.79           |
| Bridges               | <u>76,052.82</u>    |
|                       | <u>\$572,959.95</u> |

Equipment

17 Usable trucks  
   1 8-ton Austin roller  
   1 8-ton Galion roller  
   1 10-ton Galion roller (new)  
   1 #60 McCormick-Deering tractor with bulldozer  
   1 Sand loader  
   1 Hand operated road blade  
   1 Bitumuls spraying machine  
   1 Mud jack  
   2 Power-driven surface heaters  
   1 Hand-power surface heater  
   2 Truck mounted compressors, 105 cu. ft.  
   1 Trailer compressor, 105 cu. ft.

On Order - Waiting for delivery

3 #523 G.M.C. 4-cu. yd. trucks  
   1 1-1/2-ton Chevrolet chassis  
   1 105-cu. ft. Rix compressor  
   2 1/2-ton Chevrolet pickup trucks  
   1 Shovel loader  
   2 Bitumuls spraying machines  
   Miscellaneous small equipment, weed burners,  
   hand sprays, etc.

Note: Three obsolete trucks were sold.



Division of Street Cleaning

|            |                      |               |
|------------|----------------------|---------------|
| Personnel: | 1 Supervisor         | 44 Chauffeurs |
|            | 4 District directors | 1 Gardener    |
|            | 12 Labor sub-foremen | 268 Laborers  |

The Division is responsible for the sanitation and cleaning of 1550 curb miles of paved streets within the City and County of San Francisco, five pedestrian underpasses, Stockton Street tunnel, also pedestrian stair and passage-ways. City-owned lots in built-up sections are kept in a clean and sightly condition. All of the street sweepings and debris are collected and hauled away to dumping grounds where they are disposed of by the fill and cover method.

The regular work week is five days, or forty hours. One sweeping crew with automotive equipment works five nights each week. On Saturday and Sunday mornings skeleton crews work four hours, covering the main business sections.

The City is divided into four major districts, each being under the supervision of a district director. Each of these districts is divided into three sub-districts which are swept by the respective gangs and truck crews under the supervision of the



Sprinkler 1924 model

labor sub-foremen. Eleven gangs operate during the daytime, one at night. The business sections of the City are swept by 132 blockmen.

There are six routes which are covered by the motor sweepers, five in the daytime and one at night. Seven routes are covered by motor flushers, six during the daytime and one at night. In addition, there are seven street can routes and two utility routes in outlying districts, one truck being assigned to each route. A rented truck flushes minor streets in the hilly sections of the City. Seven truck routes operate as combination paper pick-up from street cans and dirt pick-up from motor sweepers.

The annual budget appropriation for the division, including the cost of new equipment, was \$772,355.

Equipment:

|                                 |                        |
|---------------------------------|------------------------|
| 27 Trucks (pick-up)             | 6 Motor flushers       |
| 3 Trucks, small                 | 4 Refuse Getter bodies |
| 1 Truck, rented                 | 140 Street buggies     |
| 4 Standard Elgin motor sweepers | 1700 Street cans       |
| 1 Standard Austin motor sweeper | 96 Can sheds           |
| 3 Austin patrol motor sweepers  |                        |

Equipment on order: 5 Truck chassis



Sprinkler, new stream-line model



Refuse collector



Refuse getter

BUREAU OF ACCOUNTS

F. W. McKenzie, Supervisor

This Bureau controls the budgetary and financial activities of the Department of Public Works. It is the point of origin of documents dealing with the disbursement of funds, and their guidance through required procedures until final liquidation.

The operating functions embrace control of payroll procedure, personnel records and field timekeeping; purchase order requisitions, sub-storeroom and inventories; automotive expenditures, gasoline and tire records; work order job costs and invoicing, side sewer job and refund accounts; State gas tax subventions; the cash revolving fund for the department; budget preparation and control; operation of the Corporation Yard telephone exchange; and the supplying of clerical service to all bureaus of the Corporation Yard.

Personnel:      1 Supervisor in charge of the Bureau  
                  1 Head clerk  
                  4 Senior clerks  
                 10 General clerks  
                  3 General clerk-stenographers  
                  4 General clerk-typists  
                  1 Telephone operator

There are three subdivisions: Payrolls and Personnel, with a senior clerk and four assistants: Purchasing and Stores with a senior clerk and two assistants: Gas Tax Subventions with a senior clerk and one assistant.

Three field timekeepers check outside operations for payroll verification, and also act as paymasters on semi-monthly pay-days.

Budgeted funds, subject to control, totaled \$5,334,924

for the year, appropriated to --

|                                      |                |
|--------------------------------------|----------------|
| Bureau of Accounts                   | \$ 39,345      |
| Bureau of Architecture               | 16,734         |
| Bureau of Building Inspection        | 64,542         |
| Bureau of Building Repair            | 492,904        |
| Central Permit Bureau                | 14,175         |
| Bureau of Engineering                | 1,728,688      |
| Sewage Disposal Plant                | 102,794        |
| Sewage Pumping Stations              | 44,197         |
| General Office                       | 177,750        |
| Bureau of Sewer Repair               | 387,166        |
| Bureau of Streets:                   |                |
| Street Repair                        | 437,765        |
| Street Cleaning                      | 772,355        |
| Bridges                              | 76,919         |
| Gas Tax (Special Road Improvement)   | 228,340        |
| Gas Tax - Street construction        | 176,250        |
| Special Gas Tax - Street Improvement |                |
| Fund                                 | <u>575,000</u> |
| Total                                | \$5,334,924    |

In addition, there was recorded expenditures of \$47,495 for side sewer installations and repair. Accounts were kept of \$1,005,495.46 expended in inter-departmental service under work order procedure for the following divisions of the City government:

|                              |                   |
|------------------------------|-------------------|
| Schools                      | \$ 305,393.85     |
| Health                       | 31,095.10         |
| Recreation                   | 29,898.82         |
| Library                      | 10,610.46         |
| Public Building Improvements | 23,959.72         |
| Gas Tax Accounts             | 289,625.73        |
| Engineering                  | 80,487.98         |
| Sewage Plants                | 6,682.10          |
| Municipal Railway            | 61,055.44         |
| Architecture                 | 4,258.50          |
| Sewer Bonds                  | 55,959.86         |
| Miscellaneous                | <u>106,467.90</u> |
| Total                        | \$1,005,495.46    |

Requisitions for purchase orders were issued totaling 4,075, also 4,228 delivery orders; and 1,422 work orders were cleared.

The Bureau has a central office at the City Hall and a division handling operating accounts at the Corporation Yard where the greater number of employees are assigned.

BUREAU OF BUILDING REPAIR

R. A. Chisholm, Superintendent

The functions of the Bureau, under the supervision of a superintendent and an assistant superintendent, are to furnish labor and materials for the repair and alterations to City-owned buildings. The personnel, which is supervised by six general foremen, represents thirteen building crafts and totals 142 employees, being supplemented by additional seasonal workers. These employees are engaged in the general repair and painting of buildings that are under the control of the Director of Public Works; they also perform work for the Board of Education and other municipal departments under work order procedure.

The Bureau furnishes labor and material for traffic striping, pedestrian lane markings at street intersections, bus stop zones, safety zones, and markings for loading and parking zones on curbs.

The Bureau furnishes personnel for the maintenance of the City Hall, Hall of Justice, Health Center Building, Emergency Hospital, Police Station, and fire houses and, in addition, is responsible for the operation of the Civic Center Power House which furnishes heat to the Civic Auditorium, Public Library, Health Center Building and City Hall.

Personnel:      2 Chief operating engineers  
                   7 Operating engineers  
                   5 Junior operating engineers  
                   16 Elevator operators  
                   1 Supervisor of janitors  
                   5 Foreman janitors  
                   2 Janitresses  
                   58 Janitors  
                   7 Window cleaners  
                   3 Watchmen

Expenditures for the year were as follows:

|                      |                  |
|----------------------|------------------|
| Maintenance services | \$286,898.21     |
| Building repairs     | 153,698.94       |
| School work orders   | 295,939.30       |
| Various work orders  | 190,857.67       |
| Traffic painting     | <u>50,409.13</u> |
| Total -              | \$977,803.25     |









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# ANNUAL REPORT

of the

DEPARTMENT OF PUBLIC WORKS

CITY AND COUNTY OF

SAN FRANCISCO

—

Fiscal Year Ending June 30, 1946

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ANNUAL REPORT

of the

DEPARTMENT OF PUBLIC WORKS  
City and County of  
San Francisco

Fiscal year ending June 30, 1946

Roger D. Lapham

Mayor

Thomas A. Brooks

Chief Administrative Officer

Harry C. Vensano

Director of Public Works

✓

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CITY AND COUNTY OF SAN FRANCISCO  
DEPARTMENT OF PUBLIC WORKS

---

November 1, 1946

OFFICE OF THE  
DIRECTOR OF PUBLIC WORKS

260 CITY HALL  
SAN FRANCISCO 2,  
CALIFORNIA

The Honorable Thomas A. Brooks  
Chief Administrative Officer  
City and County of San Francisco  
California

Dear Sir:

In accordance with the provisions of Section 20 of the Charter of the City and County of San Francisco, I herewith submit the Annual Report of the Department of Public Works for the fiscal year ending June 30, 1946.

Under your general supervision, this department is responsible for the planning, construction and maintenance of public buildings, streets, tunnels, bridges, traffic control devices, sewers and sewage treatment plants. The department is also responsible for the operation of the sewerage system, and supervises all private building work. The various functions of the department are performed by nine bureaus, as indicated by the accompanying organization chart. The personnel of the department consisted of 1121 employees at the end of the fiscal year.

Following a brief general review of the year's work, the report contains separate statements of the functions and activities of the several bureaus as prepared by the respective bureau heads.

Yours respectfully,

*H. C. Venzano*

H. C. Venzano, Director  
Department of Public Works





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**MAYOR**

ROGER D. LAPHAM

**CHIEF  
ADMINISTRATIVE  
OFFICER**

THOS. A. BROOKS

# ORGANIZATION CHART

## DEPARTMENT OF PUBLIC WORKS 1945-1946

CITY AND COUNTY OF SAN FRANCISCO

### DEPARTMENT OF PUBLIC WORKS

DIRECTOR

H.C. VENSANO

ASS'T DIRECTOR

SIDNEY J. HESTER

GENERAL OFFICE

BUREAU OF ENGINEERING

CITY ENGINEER

RALPH G. WADSWORTH

BUREAU OF ARCHITECTURE

CITY ARCHITECT

DODGE REIDY

BUREAU OF BUILDING INSPECTION

SUPERINTENDENT

JOHN G. LITTLE

BUREAU OF STREETS

GENERAL SUPERINTENDENT

PRESTON W. KING

BUREAU OF SEWER REPAIR

SUPERINTENDENT

EMILE MUHEIM

BUREAU OF BUILDING REPAIR

SUPERINTENDENT

RODERICK CHISHOLM

BUREAU OF ACCOUNTS

SUPERVISOR

FRANK W. MCKENZIE

CENTRAL PERMIT BUREAU

HEAD CLERK

SYLVAN J. ROSENBLUM

H. C. Vensano, Director

GENERAL REVIEW OF 1945-1946GENERAL

It had been anticipated that at the end of the European War many war-caused hindrances to the efficient and full operation of the Department of Public Works would rapidly disappear. This did not prove to be the case. During the fiscal year 1945-1946, shortages of manpower, materials, and equipment persisted; and various other difficulties, such as the general housing shortage, interfered with both the construction program and the normal maintenance work of the Department.

While our Engineering Bureau succeeded in spite of all difficulties in motivating its sewer re-construction program to full stride, its street widening program was delayed for a number of reasons beyond the control of the Department.

In other Bureaus, specifically those of Street Cleaning and Repair, Sewer Repair, and Building Repair, the manpower shortages gradually corrected themselves. Within about six months the crews of these Bureaus were approximately normal in size. However, material shortages became more pronounced and it was only by the greatest personal effort on the part of our employees that we were enabled to continue such work as Building Repairs where many items were difficult to obtain. Plumbing fittings and soil pipe were also almost unobtainable.

A shortage of sewer pipe has been a constant threat to the Bureau of Sewer Repair and a constant source of worry although to the present writing we have never been without some material of all sizes. The greatest threat to this Bureau has been the danger of being obliged to discontinue the installation of side sewers for which 6" vitrified clay pipe is needed and was almost unobtainable due to strikes which accentuated a generally short supply.

EQUIPMENT

In the Bureau of Street Repair, while materials and manpower became more readily available, the situation as regards equipment became worse. At the beginning of hostilities 16 heavy dump trucks were in constant use by this Bureau. At this writing only 14 are serviceable. Extra equipment was allotted to us in almost every budget but deliveries had been small in quantities and as much as a year late in timing. Today we have an order, but undelivered, for three dump trucks for the Bureau of Street Repair - ordered in July 1945; and five trucks for the Street Cleaning Bureau ordered at about the same time and also not yet delivered. For the Bureau of Sewer Repair, four eductors ordered in 1944 were only put into service in March of 1946.

REPAIR OF PAVING IN TRACK AREAS

To make more difficult the work of the Bureau of Street Repair, the Public Utilities Commission early in this fiscal year turned over to our Department a large work order for pavement patchings to be done in connection with their track repair work and on their franchise rights of way in general. When the Market Street Railway Lines were taken over, the Utilities Commission transferred to us 14 asphalt workers, all that remained of the street repair crews of the former Market Street Railway Company, but practically without equipment. The result of this situation forced our Bureau of Street Repair to allocate a portion of their already meager staff and equipment for track work, thereby reducing the personnel and equipment available for our own regular work. In spite of this, I believe a normally creditable showing has been made in connection with Street Repair.

As the Director of the Department of Public Works has many times heretofore called to public attention, the responsibility of paving within the franchise areas of both the Municipal car lines and those of the defunct Market Street Railway has never been the

responsibility of the Public Works Department, nor can it properly be taken care of until the tracks themselves have been reconstructed and put into proper shape so that new pavements, once placed, will last. At present the rise and fall of rails under street cars due to bad sub-grade and track conditions are such as to make paving repairs adjacent to them useless.

#### PERSONNEL

While manpower shortages have been overcome in the outside Bureaus, the shortage of engineering personnel required by the Bureau of Engineering in connection with their expanded construction operations has persisted. This is equally true of properly qualified personnel for the Bureau of Architecture. This shortage of professional help has persistently "worsened" and has reached a period of crisis at the present time in the office of the City Architect whose designing staff has been reduced to two men.

One of the greatest difficulties in the obtaining of men for these two Bureaus has been caused by restrictions of the Civil Service Commission limiting employments during the war period to "Limited Tenure Appointment." With plenty of work for both engineers and architects in the outside business world at higher rates of pay, it has become impossible to obtain qualified professional men at the lower rate of pay offered by the City without offer of permanence of tenure and therefore security.

The conditions in both Bureaus are further complicated by lack of sufficient drafting space. As additional space in the City Hall was unavailable, the Engineering Bureau was forced to rent some loft space at 1663 Mission Street, to which has been transferred a portion of their designing staff. The separation of the City Engineer from a portion of his staff in this manner is not a most efficient arrangement.

#### CONSTRUCTION PROGRAMS

In spite of all handicaps during this fiscal year the Bureau of Architecture completed a \$650,000 construction program. The

Engineering Bureau motivated its Sewer Expansion and Reconstruction Program to full speed and put out to contract for construction \$2,500,000 worth of this type of work. Only a limited portion of its Street Program, however, was actually started. The main feature of this program was to have been the Army Street project including the widening of Army Street proper, the extension of Clipper Street to connect with Portola Drive, the widening of San Jose Avenue south from Army, and the widening of Guerrero Street between Market and Army Streets. While the contract was let for the Clipper Street Extension, the main feature of this program, the widening of Army Street proper and the widening of San Jose Avenue as well, was deferred by a decision of the Board of Supervisors of the City and County of San Francisco because of the existing great housing shortage and the hardship which might result to 84 families now domiciled on Army Street which would have to be dispossessed of their present homes were the street to be widened. Plans for this project had been completed and were ready for bids in October, 1945. It had been our intention to complete it during the calendar year 1946. That this could not be done was a great disappointment.

For similar reasons, the opening of Geneva Avenue from Mission Street to Army Street had to be deferred, and the opening and widening of Persia Avenue between the same two streets was delayed. Nevertheless, the Engineering Department passed for construction street improvement contracts and permits to the extent of \$1,500,000.

#### BUREAU OF BUILDING INSPECTION

In the early part of the calendar year of 1946 a substantial rush of home building in anticipation of further OPA restrictions on both materials and construction, overloaded our Bureau of Building Inspection to such extent that it became immediately necessary to obtain additional building inspectors and structural engineering services. This was done through an emergency allocation of funds from the Mayor's emergency budget. In spite of this additional

help, the inspectors of this Bureau have been sorely tried by an excess of work. Under the veterans' home building program many homes have been started but, due to shortages of material, stand incomplete. The resulting extended construction period, for almost every building, has proportionately increased the number of inspection visits to be paid by the district inspectors.

In addition to its normal work the Bureau of Building Inspection, during the entire fiscal year, has been engaged in the production of a new Building Code. This code is badly needed since the present code passed in 1909 has long been obsolete. The difficulties of writing a building code are little understood except to those involved in its production. Commercial advantages are sought by many groups and the pressure on code workers is ceaseless and long drawn out. In spite of this, a complete New Code will be submitted to the Supervisors for adoption in the near future. We believe it will prove to be a creditable document.

#### OVERALL RESULTS

Finally, the Director believes that, considering all the difficulties under which the Department has operated during the past year, the entire departmental organization deserves great credit for the results obtained.

#### KENNEDY SUIT

On July 5, 1946, the California Supreme Court rendered a decision which fully removed any doubt as to the legal power of the Director of Public Works to employ consulting engineers and architects on a non-competitive contract basis to render professional services.

The decision dealt specifically with a contract which the Director awarded on September 24, 1945, to Clyde C. Kennedy, Consulting Sanitary Engineer, to cover the preparation of plans and specifications for a sewage sludge treatment plant to be located in the Islais Creek area. The contract provided that a first payment would

be made upon completion of the plot, circulation, and landscape drawings.

On December 13, 1945, a complaint by a taxpayer, acting in behalf of an organization of City employees, was filed against the City Controller to restrain him from making any payment under the Kennedy contract, on the grounds that the contract was not valid. It was alleged that the contract had not been authorized by the Board of Supervisors and that Mr. Kennedy had not been exempted by the Civil Service Commission as an expert to be employed for professional temporary services. In view of this complaint, the Controller refused to pay Kennedy's claim for his first payment under the contract and the latter then petitioned the Supreme Court for a writ of mandate to compel such payment.

The Court found that the contract was valid and, therefore, issued the writ of mandate as requested. The following quotations are taken from the decision:

"The commission (Civil Service Commission)... transmitted to the respondent (the Controller) in writing its conclusion that the petitioner was an independent contractor, that he and his staff and employees were not subject to the civil service provisions of the charter, that the commission was without jurisdiction in the matter, and that an order of exemption was unnecessary. The conclusions of .....the commission are correct.

"Section 95 of the same instrument (the charter) provides the procedure for the execution of any public work or improvement, namely, by contract. There is no serious contention that the section does not vest in the director of public works, subject to the approval of the chief administrative officer, the power to contract for the construction of public works and improvements. Plans and specifications are essential to the construction of any such work or improvement. The contract here involved covers only the preparatory plans and specifications which are necessary before the construc-



tion of the contemplated project can be commenced. Having the unquestioned express power to let contracts for the construction of the improvement, the power to obtain the plans and specifications therefor follows as a necessary incident.

"Without further discussion, this court in *San Francisco v. Boyd*, supra (17 Cal. 2d) said at page 620 that 'The employment of a person who is highly and technically skilled in his science or profession is one which may properly be made without competitive bidding.'

"Since the adoption of the new charter, the Department of Public Works, the chief administrative officer, and the Board of Supervisors have so construed its provisions as not to require that contracts for expert and professional services be subject to the civil service provisions or the procedure of competitive bidding. The practice has been for the director of public works to make such contracts with independent contractors upon the approval of the chief administrative officer and without advertising for bids. There is no language in the charter which may be said to require a different method of procedure."

#### BUDGET ANALYSIS

The population of the City of San Francisco increased from 634,536 in 1940 to 827,400 in 1946. A study of the budget of the Department of Public Works for the five-year period from 1941 to 1946 indicates that in spite of this 30.4% increase in population the regular or operating budget of the Department, exclusive of salary raises awarded by the Civil Service Commission, and therefore beyond the control of the Department, has been held to an increase of but 11.3%. Total budget figures by fiscal years from 1941-1942 to date have been listed in column (2) of Table I. In the third column have been indicated the moneys set up for capital improvements and in the fourth column amounts allowed for equipment purchases. Subtracting columns (3) and (4) from column (2) leaves what has been

called our operating budget in column (5). Column (6) shows the salary increases mentioned above. The balance given in column (7) is a theoretical figure showing the operating budget on an assumed basis that no salary increases had been awarded during this period. It does, however, include increased cost of materials and operating supplies.

A study of the increase in labor only is given in Table II showing the number of men set up in each of our bureaus in 1941-1942 and a comparative set of figures for 1946-1947. The indicated increase in personnel was less than 5%. Actually an increase of ten men in the Bureau of Sewer Repair was merely a bookkeeping transfer of our side sewer crews. These men up to 1943-1944 had been carried on an interdepartmental basis though permanently employed. At that time they were given a permanent status in our budget. The Director feels that this comparatively small increase in the maintenance budget of the Department of Public Works over a period when population had increased by 30.4%, especially when considering the almost universal wartime decrease in efficiency of labor and increase in the cost of materials and supplies is much to the credit of the Department.

## BUDGETARY STATISTICS

Table I

| (1)<br>Fiscal<br>Year | (2)<br>Total<br>Budget | (3)<br>Capital<br>Appropriation | (4)<br>Equipment | (5)<br>Net<br>Operating<br>Budget | (6)<br>Wages<br>Increases<br>etc | (7)<br>Operating<br>Budget at 1941<br>Wage Rates | (8)<br>Percent<br>Increase<br>since 1941 |
|-----------------------|------------------------|---------------------------------|------------------|-----------------------------------|----------------------------------|--------------------------------------------------|------------------------------------------|
| 1941-42               | \$2,390,226            | \$ 420,000                      | \$ 20,075        | \$1,950,151                       | \$ 36,863                        | \$1,950,151                                      | 2.4%                                     |
| 1942-43               | 2,135,859              | 100,000                         | 1,340            | 2,034,519                         | 119,572                          | 1,997,656                                        | 1 %                                      |
| 1943-44               | 2,868,965              | 638,000                         | 107,870          | 2,123,095                         | 51,016                           | 1,966,660                                        | 5.2%                                     |
| 1944-45               | 3,880,650              | 1,590,200                       | 51,265           | 2,259,185                         | 37,230                           | 2,051,734                                        | 11.3%                                    |
| 1945-46               | 3,956,340              | 1,530,000                       | 10,415           | 2,415,925                         |                                  | 2,171,244                                        |                                          |

NOTE: Column (6) is closely approximate only and includes wage increases under Salary Standardization processes and transfer of ten cribbers as explained in the text.

Table II

| Budget Employees              | 1941-42 | 1945-46 |
|-------------------------------|---------|---------|
| General Office                | 17      | 16      |
| Architect                     | 1       | 4       |
| Accounts                      | 11      | 15      |
| Building Repair               | 149     | 151     |
| Building Inspection           | 19      | 15      |
| Engineering                   | 60      | 59      |
| Richmond Plant                | 18      | 17      |
| Pumping Stations              | 5       | 6       |
| Central Permit                | 7       | 5       |
| Street Cleaning               | 317     | 325     |
| Sewers                        | 87      | 110     |
| Total number Budget Employees | 691     | 723     |

BUREAU OF ENGINEERING  
DEPARTMENT OF PUBLIC WORKS

ORGANIZATION CHART  
1945-1946

CITY ENGINEER  
ASST CITY ENGINEER

STAFF SECTIONS

ADMINISTRATION  
CONTRACTS-PERSONNEL-  
PURCHASING

SURVEYS & MAPPING  
STREET GRADES  
SUBDIVISIONS

STAFF SECTIONS

RESEARCH & REPORTS  
FRANCHISE REPORTS  
RESEARCH

PROGRAMS & BUDGETS  
STATE AID-PLANNING  
PROGRAMS

LINE DIVISIONS

DIVISION OF  
STREETS & HIGHWAYS

- 1-STREET IMPROVEMENTS
  - (a) PLANS & RECORDS
  - (b) ASSESSMENTS & PERMITS
  - (c) SIDEWALKS & COMPLAINTS
- 2-HIGHWAYS
- 3-TRAFFIC & SAFETY
- 4-SPECIFICATIONS & ESTIMATES
- 5-SPECIAL ASSIGNMENTS

DIVISION OF  
DESIGN

- 1-STRUCTURAL
- 2-SEWERS
- 3-SEWAGE DISPOSAL
- 4-MECHANICAL
- 5-ELECTRICAL
- 6-AUXILIARY WATER SUPPLY
- 7-UNDERGROUND STRUCTURES
- 8-ADMINISTRATIVE & CONTRACTS
- 9-ESTIMATES

LINE DIVISIONS

DIVISION OF  
CONSTRUCTION

- 1-INSPECTION
- 2-TESTING LABORATORY

RICHMOND-SUNSET  
SEWAGE TREATMENT PLANT

- 1-LABORATORY
- 2-OPERATION

Effective April 1, 1946

## BUREAU OF ENGINEERING

Ralph G. Wadsworth, City Engineer

### FUNCTIONS OF THE BUREAU

The work of the Bureau of Engineering is primarily concerned with highways, boulevards, streets, bridges, viaducts, sewers, sewage disposal, and operation of the Richmond-Sunset sewage treatment plant and eight sewage pumping stations. In connection with all major improvements carried out by the Department of Public Works, except those relating to public buildings, the Bureau of Engineering prepares plans and specifications and supervises construction in the field. The Bureau also performs many continuing functions related to street improvements, traffic control, street name signs, spur tracks, sidewalks and structures, auxiliary water supply system, sanitary fill, surveys, subdivisions, and maintenance of maps and records for public information. A further description of many of these functions will be found in the section of this report entitled, "Functions and Activities of Divisions and Sections."

### GENERAL REVIEW OF YEAR'S WORK

#### POST-WAR CONDITIONS

The termination of hostilities in World War II, which occurred on August 15, 1945, immediately set in motion a train of events and circumstances which had a marked influence on the work of the Bureau of Engineering. Some of the conditions following the end of the war were quite unexpected. Traffic on City streets immediately exceeded all previous records in spite of the fact that practically no new automobiles became available. The population of the City showed no evidence of declining from its wartime peak, with the result that there was a continuing and insistent demand for additional housing. The diversion of building materials to the housing program made other types of construction difficult from the standpoint of materials and equipment. There were no signs of any serious unemploy-

ment and in fact labor shortages were the rule.

#### STREET WORK

The increase in traffic congestion immediately emphasized the desirability of numerous street improvement projects which had been in the planning stage for some time. It was possible to undertake a few smaller projects of this type. However, because of the housing shortage and the reluctance of the Board of Supervisors of the City and County to cause the removal of citizens from their homes, it was impossible to clear the right of way for the Army Street improvement, which would have materially helped to relieve one of the serious bottle-necks in the City's street system.

The housing program produced a flood of new subdivisions requiring attention by the Bureau and stimulated the improvement of a large number of previously dedicated, but unpaved, streets. Housing work also produced a large number of inquiries addressed to the office with reference to the location of sewers and side sewers.

#### SEWER CONSTRUCTION

The shortage of materials was not as severe in connection with sewer projects as with other types of construction and an extensive program of sewer construction and replacement was undertaken during the fiscal year. Contractors' bid prices were high as compared with prewar prices but, in most cases, satisfactory bids for comparative purposes were received and in only one or two instances were bids rejected.

#### CONTRACTS AWARDED

Plans and specifications were prepared and contracts were awarded during the fiscal year for 107 projects, having a total estimated cost of \$4,027,446. The total amount actually expended during the year on construction work under the Bureau's supervision was \$1,527,074.

#### SEWAGE DISPOSAL

Special emphasis was placed on planning for additional sewage

disposal works. Plans and specifications were completed for the final enlargement of the Richmond-Sunset sewage treatment plant. Decision was made as to the general arrangement and selection of sites for the two plants which will constitute the facilities for treatment of the flow through the North Point main, which serves the easterly portion of the City. Planning of the preliminary treatment plant to be located near Grant Avenue and Bay Street was started by the sewage disposal section of the Bureau. The planning of the sludge treatment plant, which will be located in the Islais Creek area, was undertaken by Clyde C. Kennedy, Consulting Sanitary Engineer, on a contract basis.

#### PERSONNEL

As a result of expanding activities in connection with construction work, street improvements and subdivisions, substantial expansion of the engineering staff became necessary. The over-all increase in the field and office staffs was 24% during the year. The field inspection staff was increased 62%.

#### ORGANIZATION PLAN

The organization chart for the Bureau of Engineering, as shown herein, became effective April 1, 1946, and shows minor departures from the plan which was in effect previously. The major work of the Bureau is divided among four line divisions, namely Streets, Design, Construction, and Sewage Plant Operation. The various staff functions of the Bureau are divided among four sections designated Surveys and Mapping, Research and Reports, Programs and Budgets, and Administration. The Surveys and Mapping Section is shown as a staff unit for the reason that it renders service to three of the line divisions, although certain of its functions are of an independent nature. On the other hand the Division of Design, as now organized, contains units which render various services for the Bureau as a whole or for other units and might, therefore, be

considered in some degree as being a staff unit.

The normal operation of the Bureau requires constant interchange of advice, information, and service between divisions and sections. The Assistant City Engineer is responsible for coordination of these various inter-related activities and, in addition, serves as head of the Division of Streets.

### PERSONNEL

Many personnel changes occurred during the year as a result of resignations, retirements, deaths, the return of men from military leave, and new appointments to meet the needs of the expanding construction program.

#### CITY ENGINEER

John J. Casey, City Engineer since 1932, was retired on March 16, 1946, having been on leave because of ill health since September 16, 1945. During the last half of September, 1945, Sherman P. Duckel, Assistant City Engineer, was in active charge of the Bureau. On October 1, 1945, Ralph G. Wadsworth was appointed Acting City Engineer by the Director of Public Works and on March 17, 1946, he became City Engineer.

#### STAFF EXPANSION AND TURNOVER

Owing to the fact that no regular Civil Service examinations were given, and appointments of a temporary nature were made from "limited tenure" lists, the turnover of employees was large. During the year the following requests for employee certifications were made to the Civil Service Commission:

For permanent positions 87  
For temporary positions 38

In addition to the appointments on the above requests, emergency appointments were made on many of the temporary requisitions.

Following are employment totals at the beginning and end of fiscal year:

| <u>Permanent positions</u> | <u>July 1, 1945</u> | <u>June 30, 1946</u> |
|----------------------------|---------------------|----------------------|
| Office and Field Staffs    | 131                 | 162                  |
| Sewage Treatment Plant     | 17                  | 17                   |
| Sewage Pumping Station     | 6                   | 6                    |
| Totals                     | 154                 | 185                  |



CLASSIFICATION OF EMPLOYEES

The office and field staffs were classified as follows at the beginning and end of the fiscal year:

| <u>Division and Grade</u>                                   | <u>July 1, 1945</u> | <u>June 30, 1946</u> |
|-------------------------------------------------------------|---------------------|----------------------|
| <u>Engineering Design and Administrative Divisions</u>      |                     |                      |
| City Engineer                                               | 1                   | 1                    |
| Assistant City Engineer                                     | 1                   | 1                    |
| Senior Engineer                                             | 1                   | 1                    |
| Engineer                                                    | 10                  | 8                    |
| Assistant Engineer                                          | 26                  | 36                   |
| Junior Engineers                                            | 1                   | 2                    |
| Electrical Engineering Inspector                            | 1                   | 3                    |
| Inspector Public Works Construction                         | 3                   | 2                    |
| Senior Draftsman                                            | 19                  | 17                   |
| Draftsman                                                   | 14                  | 16                   |
| Junior Draftsman                                            | 2                   | 4                    |
| Cartographer                                                | 1                   | 1                    |
| Total                                                       | 80                  | 92                   |
| <u>Construction Division - (Supervision and Inspection)</u> |                     |                      |
| Engineer                                                    | 1                   | 1                    |
| Assistant Engineer                                          | 2                   | 5                    |
| Junior Engineer                                             | 12                  | 19                   |
| Engineering Chemist                                         | 1                   | 1                    |
| Total                                                       | 16                  | 26                   |
| <u>Survey Division - (Field and Office)</u>                 |                     |                      |
| Engineer                                                    | 1                   | 1                    |
| Assistant Engineer                                          | 2                   | 2                    |
| Chiefs of Party                                             | 4                   | 5                    |
| Junior Engineer                                             | 8                   | 10                   |
| Surveyor's Field Assistants                                 | 7                   | 8                    |
| Senior Draftsman                                            | 1                   | 1                    |
| Total                                                       | 23                  | 27                   |
| <u>Clerical Force</u>                                       |                     |                      |
| Clerks                                                      | 4                   | 5                    |
| Stenographers and Typists                                   | 8                   | 12                   |
| Total                                                       | 12                  | 17                   |
| GRAND TOTAL                                                 | 131                 | 162                  |

TYPE OF APPOINTMENT

The breakdown of personnel in engineering classifications according to type of appointment was as follows:

| <u>Type</u>                | <u>July 1, 1945</u> | <u>June 30, 1946</u> |
|----------------------------|---------------------|----------------------|
| Civil Service appointments | 91                  | 96                   |
| Limited Tenure "           | <u>28</u>           | <u>49</u>            |
| Total                      | 119                 | 145                  |

RETURN FROM MILITARY LEAVE

During the fiscal year, the following permanent employees returned to their positions in the Bureau after release from the Army, Navy, or Maritime service:

| <u>Name</u>           | <u>Service</u> | <u>Date of Return</u> |
|-----------------------|----------------|-----------------------|
| Frank Coleman         | Maritime       | 4/1/46                |
| Joseph Corrao         | Navy           | 2/18/46               |
| Darrell D. Davis      | Navy           | 10/22/45              |
| Llewellyn De Cew      | Army           | 2/4/46                |
| Stanley C. Gerugty    | Army           | 12/26/45              |
| James T. Hester       | Army           | 6/3/46                |
| Jess L. Ingram        | Army           | 11/16/45              |
| Peter D. McCarthy     | Army           | 11/1/45               |
| Milton P. Peyre       | Army           | 10/1/45               |
| John E. Pugh          | Maritime       | 1/9/46                |
| Ivan Sandberg         | Navy           | 10/10/45              |
| Thomas L. Skillington | Navy           | 2/1/46                |
| Michael F. Sweeney    | Army           | 10/1/45               |
| Fred Winters          | Navy           | 11/5/45               |
| Herman J. Zimmerman   | Army           | 5/16/46               |

PERSONNEL LOSSES

The Bureau lost the valuable services of the following permanent employees through death or retirement during the year:

| <u>Name</u>         | <u>Classification</u>  | <u>Length of City service</u> |
|---------------------|------------------------|-------------------------------|
| Through death:      |                        |                               |
| John F. Coughlan    | Chief of Party         | 33 years                      |
| Julian A. Duncray   | Junior Engineer        | 20 years                      |
| Roland B. Reed      | Inspector Public Works | 16 years                      |
| Through retirement: |                        |                               |
| John J. Casey       | City Engineer          | 30 years                      |
| Thomas E. Connor    | Cartographer           | 12 years                      |
| Adelaide Kelly      | Stenographer           | 24 years                      |
| Frederick O. Shutts | Engineer               | 38 years                      |
| Henry W. Swanitz    | Senior Draftsman       | 21 years                      |

FUNCTIONS AND ACTIVITIES OF DIVISIONS AND SECTIONS

The following brief statements cover the functions of each of the divisions and sections of the Bureau as now organized. These functions, taken together, represent the functions of the Bureau as a whole and supplement the brief summary contained above under "Functions of the Bureau." The statements also contain a record of some of the principal activities and accomplishments of each of the organization units during the past year. These records, however, refer only briefly to those activities of the particular section having to do with the major accomplishments of the Bureau as a whole, which are described individually in later sections of this report.

DIVISION OF STREETS AND HIGHWAYS - S.P.Duckel, Asst. City Engineer

This division is responsible for all engineering work connected with construction, improvement, and maintenance of City streets. In cooperation with the State Division of Highways the construction, improvement, and maintenance of State Highways within the City are regularly planned and supervised. The planning and installation of traffic control devices including traffic striping of roadways and the installation of street and traffic signs are performed in cooperation with the Police Department. Numerous related functions are performed by the several sections and units composing the division as described hereafter.

Street Improvement Section - C. H. Stern, Engineer

The engineering for all types of street improvements and maintenance work is handled by this section with the exception of traffic engineering and the design of major traffic thoroughfares. This section is composed of three units.

Plan and Record Unit under H.L.Reinfeld, Assistant Engineer, prepares line and grade diagrams for all street and sewer work performed under both private contract and assessment proceedings. Records of completed street work are maintained for future reference. These contain types of curbs and pavement, the location and type of

roadway drainage structures and the locations of main and side sewers. All applications for building permits are referred to this unit for information on the location of side sewers. Approximately 5,000 inquiries relative to the location of sewers and side sewers were answered this year. A total of 2,647 building permits passed through this office during the same period.

Assessment and Permit Unit under L.C. Whaley, Assistant Engineer, prepares all permits for original street improvements performed under private contract and institutes all proceedings for street improvements performed under assessment districts. It also determines the amount of the assessment to be paid by the property benefitting by the improvement. It prepares the plans for all sidewalk narrowing projects and for street maintenance work, prepares the permits for spur tracks, and recommends on the declaration of additional underground districts. The following tables indicate the volume of work handled:

Street Improvement Proceedings

|                                              |       |
|----------------------------------------------|-------|
| Resolutions of intention passed              | 32    |
| Projects recommended to Board of Supervisors | 29    |
| Notices posted                               | 1,119 |
| Resolution of intention notices mailed       | 888   |
| Ordinances passed ordering improvements      | 23    |
| Improvement proposals published              | 24    |
| Awards of contract                           | 19    |
| Notices of recordation posted                | 162   |
| Notices of recordation mailed                | 159   |
| Private contracts granted                    | 43    |

Assessments and Bonds for Street Work

|                                                   |             |
|---------------------------------------------------|-------------|
| Assessments issued for cost of street work        | 8           |
| Cost of street work covered by assessments issued | \$33,926.79 |
| Receipts issued for bond payments                 | 77          |
| Amount of bond payments collected                 | \$6,852.52  |

Spur track permits granted

|                                                              |    |
|--------------------------------------------------------------|----|
| Heavy industrial - by Director of Department of Public Works | 15 |
| Light industrial - by Board of Supervisors                   | 2  |

Sidewalk and Complaint Unit under E. E. Jordan, Assistant Engineer, investigates the condition of sidewalks, street occupancies,

and obstructions, and notifies responsible property owners and companies to make the necessary repairs and to perform such work as is required to comply with the requirements for public safety. It makes recommendations for the granting of permits for street excavations and inspects the replacement of the pavement over same. Investigations and recommendations are made of the many applications for various types of permits. Numerous complaints are investigated and recommendations made for their adjustment. The following tables summarize the activities of the unit during the fiscal year:

Notices, Permits, and Investigations

|                                          |       |
|------------------------------------------|-------|
| Notices to construct or repair sidewalks | 4,148 |
| Notices to construct bulkheads           | 11    |
| Notices to remove obstructions           | 192   |
| Notices to obtain curb lowering permits  | 59    |
| Notices to construct guard rails         | 7     |
| Notices to obtain oil tank permits       | 3     |
| Notices to replace side sewer covers     | 176   |
| Notices to obtain street space permits   | 342   |
| Street space permits reported on         | 2,101 |
| Oil tank permits reported on             | 46    |
| House moving permits reported on         | 22    |
| Miscellaneous calls for information      | 3,209 |
| Blasting bonds set                       | 3     |
| Curb lowering permits reported on        | 696   |
| Defects in pavement reported             | 881   |
| Damage signs reported on                 | 15    |
| Excavations permits approved             | 6,226 |
| Excavation repaving inspected            | 289   |

Permits and fees for Corporation Excavations

|                            | <u>Permits</u> | <u>Lin.Ft.</u> | <u>Fees</u> |
|----------------------------|----------------|----------------|-------------|
| Pacific Gas & Electric Co. | 2,712          | 49,695         | \$4,161.00  |
| San Francisco Water Dept.  | 3,324          | 6,262          | 5,041.50    |
| Pacific Tel. & Tel. Co.    | 190            | 24,753         | 506.00      |
|                            | 6,226          | 80,710         | \$9,708.50  |

Special Permits

|               | <u>Number</u> | <u>Fees</u> |
|---------------|---------------|-------------|
| Oil Tanks     | 43            | \$ 66.00    |
| Curb Lowering | 696           | 3,973.50    |
| Street Space  | 1,343         | 24,881.90   |
| House Moving  | 22            | 44.00       |

Highway Section - M. D. Johnson, Assistant Engineer

This section is responsible for all engineering design connected with the construction and improvement of major thoroughfares and highways. It cooperates with the Traffic Section in the design

of channelized intersections and roadways; with the Structural Section, in the design of bridges, viaducts, underpasses and interchanges; and with the Sewer Section in the drainage of roadways. It confers with the rights of way agents of the Director of Property in the acquisition of land for highways and streets and with the Bureau of Building Inspection to prevent building on property required for future highways. It consults with the Division of Highways on location and design of major thoroughfares financed from gasoline tax funds.

Traffic Engineering and Safety Section - G. W. Purser, Eng'r

This section supervises all traffic striping, the installation of signs of all types, the installation of bus stops and safety zones for street car loading, and designs the channelization and signalizing of streets and highways. It conducts traffic and pedestrian counts, including origin and destination surveys. It acts in an advisory capacity to the Police Commission which, by provisions of the City Charter, has the power to regulate traffic, including the location and use of traffic control devices. It cooperates with the Street and Highway Sections in the design of streets and highways, and provides routings for traffic during construction of improvements in City streets. It maintains records of all traffic accidents reported by police from which it determines the locations most in need of controls. It reports damages to City property caused by traffic accidents so that the City can claim reimbursement from responsible parties. The following list summarizes some of the activities of the Traffic and Safety Section during the fiscal year:

Traffic striping program

|                        |           |
|------------------------|-----------|
| Pedestrian cross-walks | 93 miles  |
| Traffic lane stripes   | 310 miles |
| Safety zones           | 493       |
| Bus stop zones         | 138       |
| Pavement words painted | 5,781     |
| Total expenditures     | \$65,560  |

Signs

|                              |         |
|------------------------------|---------|
| Stop signs - reflectorized   | 324     |
| Warning and regulatory signs | 273     |
| Parking restriction signs    | 79      |
| Total expenditures           | \$6,500 |

"Stop and Go" signals

|                               |     |
|-------------------------------|-----|
| Three-light signals installed | 116 |
| Two-light signals installed   | 4   |
| Two-light signals removed     | 18  |

Street Car Loading Islands

|                               |    |
|-------------------------------|----|
| Concrete curb type            | 17 |
| Raised bars and painted zones | 53 |

Specifications and Estimates Section - L. DeCew, Ass't Eng'r

This section coordinates the collection and preparation of plans and specifications for all projects for the construction, improvement, and maintenance of streets and highways, including the construction of traffic channelization projects. It investigates and reports on claims filed against the Department of Public Works involving personal injury and property damage.

Special Assignments Section - C. V. Patterson, Ass't Engineer

This section assigns all requests for reports, information and service in the Bureau and acts as expeditor on the same. It prepares all project statements for submission to the State Division of Highways and keeps a complete record of the funds allocated to each project. The head of this section acts as general assistant to the Assistant City Engineer. This section maintains a record of right of way purchases for all projects to be constructed by the Bureau of Engineering.

DIVISION OF DESIGN - R. H. Owens, Senior Engineer

The division, consisting of ten sections as shown on the Bureau organization chart, is primarily responsible for the design of extensions and improvements of the City's sewer and sewage disposal facilities and the preparation of plans and specifications for all construction work in connection therewith. The division also supervises the maintenance and operation of eight sewage pumping stations and frequently furnishes engineering services in the sanitary, structural, electrical and mechanical fields to other City departments. Several of the sections, particularly the sewer, struc-

tural, electrical, underground and administrative sections, perform technical services for other divisions of the Bureau as their needs require. The major functions of the various sections and their principal activities during the year 1945-1946 are briefly described in the following paragraphs.

Structural Section - V. B. Christensen, Assistant Engineer, in charge during absence of L.J. Archer, Assistant Engineer, on military leave.

The section prepares plans for all major structures included in projects undertaken by the Bureau such as reinforced concrete sewers, tunnels, bridges, retaining walls and sewage treatment plant facilities. Records of surface and ground-water conditions are maintained for areas subject to sliding and subsidence and studies are made for their stabilization.

The section also acts in an advisory capacity to the City Architect in the preparation of plans for school buildings, fire stations and other public buildings. In addition, the section reviews annual maintenance inspection reports on approximately 195 City-owned structures under the jurisdiction of the Department of Public Works and makes recommendations for necessary repairs.

During the past fiscal year, new standard designs were prepared for circular and egg-shaped sewers, pole foundations, pile spacing under sewers, concrete balustrades and bridge slab moments based on "Westergaard's Modified Procedure."

Sewer Section - R. F. Lauenstein, Engineer

Functions include principally the design of the City's sewer system, the preparation of plans for various projects and the maintenance of records of work completed. The section also makes investigations and reports on all matters affecting the design, operation or maintenance of the sewer system. During 1945-1946 hydraulic computations of storm run-off and sewer sizes were made for four major drainage districts; preliminary studies were completed for two new sanitary diversion sewers (St. Charles Avenue, 46th Avenue and



Lincoln Way) and for the Scott Street Sewer System; plans were developed for 35 construction projects; the proposed sewer layouts in 17 new subdivisions were checked; 6 new sewer design standards were developed; and 4 special reports and 59 special investigations were made.

Information and assistance regarding existing and future sewers and standard requirements for sewers are furnished to the public, other City departments, contractors, and the Bureau of Sewer Repair.

Sewage Disposal Section - Marvin Anaya, Engineer

The section is responsible for the planning of the City's sewage treatment plants. During the past year plans were completed and drawings and specifications prepared for the final enlargement of the Richmond-Sunset Plant. In addition, numerous studies were made leading up to the selection of sites for the North Point Plant and in January 1946 preliminary design work was started.

The section also occasionally gives sanitary engineering assistance to the Department of Public Health and other city departments.

Mechanical Section - J. Sanders, Assistant Engineer

The section prepares plans for mechanical installations at sewage pumping stations and for modification and betterment of equipment at the Richmond-Sunset Sewage Treatment Plant. Plans and specifications for special equipment or mechanical work required by other bureaus or departments are also prepared when requested.

Electrical Section - Ivan Sandberg, Assistant Engineer

This section prepares plans, specifications and cost estimates for electrical work in connection with the construction of streets and boulevards; bridges, tunnels and viaducts; traffic signals, safety and warning lighting; sewage treatment plants and pumping stations; and assists in the field inspection of the above work. It supervises the sewage pumping stations and conducts tests of the

electrical equipment of the Richmond-Sunset Sewage Treatment Plant. Reports, tests, and investigations in connection with all electrical work under the jurisdiction of the Bureau of Engineering are handled by this section.

During the past year the work of the section consisted largely of design of the electrical installations at new sewage treatment plants and plans for 3-light modern traffic signals on major thoroughfares. Reports were made on the lighting of offices in the City Hall and on electric arterial stop signs throughout the City.

A.W.S. System Section - W. N. Buckley, Assistant Engineer

Primarily, this section has charge of all work connected with the design, installation, alteration, and repair of units of the Auxiliary Water Supply System including pipe lines with control valves and hydrants, pumping stations, fire-boats, reservoirs, pressure tanks and cisterns. Investigation of, and arrangements for, changes in the low pressure hydrant system are also made.

Records consisting of location diagrams of underground installations, maps, etc., are kept posted to date. Information on the system is furnished to public and private utilities or others when requested.

Plans for special equipment are prepared by this section for the San Francisco Fire Department as required.

Underground Structure Section - M. J. Callaghan, Ass't Eng'r

The section maintains records of underground structures and foundation conditions throughout the City. In connection with new construction projects, information is secured from all utility companies as to the location of their pipes, conduits and other underground facilities so as to ensure minimum interference with existing construction. In the case of new subdivisions, the section reviews the proposed locations of all proposed utility lines and assists in adjusting any conflicts so that all necessary lines will be installed before pavement is laid.

The section has also handled all priority negotiations between the Department of Public Works and the War Production Board and the Civilian Production Administration. Thirty-nine applications were filed during the past year and several supplements and appeals were subsequently submitted.

Administrative Section - G. Galli, Engineer

The section programs the work of the Division of Design and coordinates the activities of the various sections particularly in the assembly of plans, specifications and estimates required for construction contracts. Standard specifications are revised from time to time as required.

The section also operates stenographic and mimeographing services and maintains reference files for the benefit of the whole bureau.

Estimating Section - F. H. Holzheiser, Draftsman

The section prepares all cost estimates for sewers, sewage disposal, and miscellaneous projects in the Division of Design including preliminary comparative estimates, contract estimates, and estimates for field changes. It also analyzes actual costs of construction projects to serve as a basis for future estimates.

CONSTRUCTION DIVISION - C. M. Taylor, Engineer

The Construction Division supervises and inspects all construction contracts under the jurisdiction of the Bureau of Engineering. The division includes the field inspection staff and a testing laboratory.

Field Inspection

Field Inspection Staff consisting of assistant engineers, junior engineers and electrical engineering inspectors, inspects all city-paid construction contracts continuously throughout the period of operation. Street improvement contracts are ordinarily inspected only at such times as critical operations are in progress. Progress reports are submitted daily and weekly. Estimates of the value of

work done are submitted monthly to serve as a basis for progressive payments to Contractors. At the completion of each contract a final report is prepared together with final as-built drawings.

#### Sanitary Fill for Garbage Disposal

Continuous inspection is provided at the sanitary fill for the purpose of insuring compliance with franchise terms with reference to earth cover requirements, maintenance of drainage, and compliance with sanitary requirements.

#### Laboratory and Testing Section

This section secures samples of all important materials going into construction work and makes the necessary chemical and physical tests to insure compliance with specifications. Testing work is also performed for other departments of the City, including the Purchasing Department, Public Utilities Commission and San Francisco Fire Department. A description of the work performed during the past year is included in a separate section of this report.

#### Inspection of Structures

Once a year the staff of the division makes a complete inspection of all structures under the jurisdiction of the Department of Public Works to ascertain their condition and to serve as a basis for planning necessary repairs and maintenance work. These structures include bridges, stairways, retaining walls, tunnels, and seawalls.

#### Activities during 1945-1946

Due to the expansion of the construction program during the first post-war year, the staff of the division was expanded and its activities greatly increased. Information regarding the various construction contracts supervised during the year will be found hereinafter under special headings as to type of construction.

#### ADMINISTRATIVE SECTION - L. Glick, Engineer

This section handles all routine administrative work for the Bureau of Engineering such as preparation of budgets, personnel pro-

cedures of all kinds, preparation of work orders for departmental services, all procedures for the securing of necessary materials and supplies, checking of time reports, and maintenance of correspondence, files, mailing facilities and other services.

In addition, the Administrative Section prepares and issues all certificates for progressive payments to contractors during the progress of construction work, maintains progress charts, checks daily construction reports and prepares final completion and acceptance letters.

The section also performs certain work with reference to contracts for the Office of the Director of the Department of Public Works. This includes the publication of Director's Orders pertaining to contracts and public proceedings, preparing contract forms, checking contractor's bonds and insurance policies, issuing requests for payment of inspection and survey fees, and preparing completion notices and acceptance recommendations regarding street work to the Board of Supervisors.

#### SURVEYS AND MAPPING SECTION

The section makes all surveys required by all divisions of the Bureau and other bureaus of the Department of Public Works and frequently makes surveys for other City departments. Office work includes preparation of maps and descriptions based on field surveys and also various other types of work assigned to the section.

##### Field Surveys

Field work performed by five survey parties includes surveys to obtain data for various engineering projects, establishment of grades, estimates for improvements, surveys for construction projects, final examination of street work, rechecking and establishment of monument lines, precise level bench marks, subsidence surveys, lot surveys, subdivisions and other required work. Surveys performed during the past year are described in further detail in

the section of this report entitled "Surveys."

#### Routine Office Work

Routine office work covers the preparation and collection of information required for use by the surveyors in the field; indexing and filing of survey notes; making working drawings, sketches and plats for property acquisition and sale; writing and checking of all deeds incidental to street or property acquisitions or sale; investigations, reports and resolutions relating to street openings and closings; reports on all proposed new subdivisions; maintaining city maps; giving information to the public and to private surveyors and engineers; establishment of grades and sidewalk widths and other related work.

#### Office Work during Past Year

New monument maps, prepared from surveyor's field notes, were made. Descriptions required for the transfer of lands in street widenings, extensions, openings and closings and abandonments were written. Deed descriptions presented by the Director of Property conveying other city properties were checked. Working drawings and computations necessary to compile this information were also made.

Ten appeals from decisions of the City Planning Commission regarding residential and commercial zone changes, which were presented to the Board of Supervisors, were checked to determine if signatures representing a sufficient area, as provided by ordinance, had been secured to enable the Board to act on the appeal.

Fifty-seven actions to quiet title to land (McEnerney Actions) as well as Eminent Domain Actions, referred to the Division of Surveys by the City Attorney were checked to determine the City's interest in the property involved in the actions.

Seventeen subdivisions submitted to the section were examined to determine proper application of grades and sidewalk widths.

Forty of the 100 scale maps delineating official grades for the convenience of the office staff and the public were redrawn and

brought up to date.

Due to the rigid enforcement of the traffic law relative to parking on grades, an unusual number of inquiries as to the percentage of street grades by the public and the Traffic Fines Bureau required a great portion of the time of one member of the staff.

#### Maps Filed

Official maps filed for record during the year included the following:

Map of the Opening and Dedication of Streets in "Parkmerced"  
Record of Survey Map, showing a portion of "Precita Valley Lands"  
Map showing the "Widening of Hunters Point Boulevard"  
Map showing the Opening of "Casey Drive"

#### PROGRAMS AND BUDGETS - A. V. Bowhay, Engineer

This section prepares preliminary material for annual budgets and develops programs for several years in advance for consideration by the Director of the Department. The section also handles all procedures in connection with the application for post-war financial aid from the State of California and prepares claims for reimbursement.

Reports on construction programs prepared during the year included the following:

|                                                                                                                                                                 |                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Post-war Highway Program - To the Joint Fact-Finding Committee on Highways and Bridges of the State Legislature (Collier Committee) . .                         | Sept. 11, 1945 |
| Post-war Program - Highways, Sewers, Buildings, etc., to the Senate Committee of the State of California (Mayo Committee) . . .                                 | Sept. 13, 1945 |
| Final Report - To the Joint Fact-Finding Committee on Highways, Streets and Bridges (Collier Committee) . . . . .                                               | Nov. 26, 1945  |
| Highway Construction Program 1946-47 - To the Chief Administrative Officer . . .                                                                                | Jan. 30, 1946  |
| Capital Outlay Program - to Mayor Lapham . .                                                                                                                    | Feb. 18, 1946  |
| Proposed 10-Year Program on Highways, Streets & Bridges-Supplementary Report to Joint Fact-Finding Committee of the State Legislature (Collier Committee) . . . | Feb. 25, 1946  |

A major activity of the section during the latter part of the

fiscal year was the undertaking of a series of economic studies of various alternate plans for major street improvements in the City. These studies are taking into account not only original construction costs but also annual maintenance and operation charges as well as annual savings to motor vehicle operators.

RESEARCH AND REPORT SECTION - M. H. Levy, Engineer

This section is charged with the following duties: correlation, preparation, and distribution of the annual report of the Department of Public Works; photographing projects under Bureau supervision before, during and after completion and filing and indexing negatives and prints; compilation of "Report of the Obligations as to the Use of Streets under Franchises and Permits," as required by City ordinance; keeping statistics, compiling reports and answering inquiries with reference to the disposal of garbage and refuse by the fill and cover method; and preparation of special reports as requested by the City Engineer.

During the past fiscal year the following reports were submitted:

1. Statistics on the fill and cover method for the previous ten-year period to be used in connection with the granting of a new franchise, the previous one having expired November 25, 1945.
2. Report as of December 31, 1945, on the obligations as to use of streets by the California Street Cable Railroad Company and the street repairs necessary to fulfill the obligations of their franchise. This Company is now the only privately owned street railway operating in San Francisco, as the former Market Street Railway Company is now a part of the Municipal Railway System.
3. An analysis of the various State laws with reference to the formation of Motor Vehicle Parking Districts.



Work was continued on the collection of data in the field and compilation in the office for a final report on spur tracks and miscellaneous franchises and permits involving the use of streets and also covering all existing encroachments on the street areas.

#### CURRENT CONTRACT DATA

The following tabulations list all of the construction contracts which were under supervision of the Bureau during the fiscal year 1945-46. The tabulation is subdivided into five sections according to type of construction. For each contract which was current during the year there is indicated the name of the contractor, dates of award and completion, actual or estimated contract cost, percentage of work completed and the amount of money expended during the fiscal year, the latter figure being approximate in the case of those contracts not entirely completed at the end of the year. The tabulation also indicates the particular fund against which the cost of the work was charged. In the case of contracts finally completed during the year, the figure shown for "Contract Amount" is the actual total amount paid the contractor. In the case of those contracts which were still under way at the end of the fiscal year, the amount shown for that item is the estimated value of the contract based on bid prices and estimated quantities.

## Bureau of Engineering

CURRENT CONTRACT DATA  
1945-1946SUMMARY

| Table                                          | Type of Construction                  | Contracts Awarded<br>1945-1946 |                 | Amount Expended<br>During Fiscal Year<br>1945-1946 |
|------------------------------------------------|---------------------------------------|--------------------------------|-----------------|----------------------------------------------------|
|                                                |                                       | Number                         | Aggregate Value |                                                    |
| A                                              | Boulevards                            | 3                              | \$ 401,485.45   | \$ 22,709.00                                       |
| B-1                                            | Streets - Private Contract            | 43                             | 883,234.50      | 335,104.00                                         |
| B-2                                            | Streets - Assessment Proceedings      | 18                             | 114,813.52      | 78,207.86                                          |
| B-3                                            | Streets - Public Contract, City Pay   | 11                             | 15,931.97       | 12,117.44                                          |
| C                                              | Traffic Signals and Channelization    | 4                              | 70,251.60       | 32,825.88                                          |
| D-1                                            | Sewers - Pipe, Vitrified and Concrete | 10                             | 414,264.31      | 325,228.72                                         |
| D-2                                            | Sewers - Concrete (Monolithic)        | 6                              | 1,290,160.93    | 685,863.00                                         |
| E                                              | Miscellaneous                         | 12                             | 837,303.84      | 35,018.54                                          |
| Totals Awarded and Expended during fiscal year |                                       | 107                            | \$4,027,446.12  | \$1,527,074.44                                     |

Explanation of abbreviations for "funds" as used in following tables:

- General - General Fund City and County  
 Spec. Rd. - Special Road Improvement Fund  
 2d 1/4¢ - Special Gas Tax Street Improvement  
 1st 1/4¢ - One-quarter Cent Gas Tax for expenditure on State Highways within the City  
 Assessment - Assessed to property benefiting under Street Improvement Ordinance of 1934  
 Pd. Prop. Owner - Costs borne by Property Owner under Private Contract  
 1944 Sewer Bonds - Bond Issue voted by citizens on November 7, 1944 - \$12,000,000.

CURRENT CONTRACT DATA 1945-1946

| Description                                                                                                                       | Contractor                | Awarded  | Completed<br>Date | %   | Contract<br>Amount                          | Amount<br>Expended in<br>1945-1946 | %   | Fund               |
|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------|----------|-------------------|-----|---------------------------------------------|------------------------------------|-----|--------------------|
| <b>A - BOULEVARDS</b>                                                                                                             |                           |          |                   |     |                                             |                                    |     |                    |
| Market St. between<br>Valencia St. & Castro<br>St. (Reconstruction<br>inner tracks, remove<br>outer tracks & re-<br>pave roadway) | Eaton & Smith             | 12/11/44 | 10/25/45          | 100 | (\$274,488.15)<br>DPW Share<br>\$ 49,759.27 | 18,909                             | 38  | 2d 1¢              |
| Persia Ave. Extension<br>between Mission St. &<br>Ocean Ave. (Sewers,<br>curb, paving)                                            | Eaton & Smith             | 5/15/46  |                   | 0   | 13,031.70                                   |                                    | 0   | 2d 1¢              |
| Clipper St. between<br>Douglass St. & Por-<br>tola Drive (Sewers,<br>curbs, paving)                                               | Eaton & Smith             | 5/29/46  |                   | 2   | 182,232.75                                  | 3,800                              | 2   | 2d 1¢              |
| Guerrero St. between<br>14th St. & Army St.<br>(Sidewalk narrowing,<br>channelize, repave)                                        | Eaton & Smith             | 6/28/46  |                   | 0   | 206,221.00                                  |                                    | 0   | Spec. Rd.          |
| Totals Awarded and Expended during fiscal year                                                                                    |                           |          |                   |     | \$401,485.45                                | \$22,709                           |     |                    |
| <b>B-1 - STREETS - Private Contracts</b>                                                                                          |                           |          |                   |     |                                             |                                    |     |                    |
| Sawyer St.-East<br>Visitation to 36'<br>North (Paving)                                                                            | The Pay<br>Improvement Co | 10/18/44 | 6/30/46           | 100 | \$ 100                                      | \$ 100                             | 100 | Pd. Prop.<br>Owner |
| 33d Ave. between<br>Pacheco & Quintara<br>Sts. (Sewers, curbs<br>& paving)                                                        | C. L. Harney              | 1/31/45  | 7/19/45           | 100 | 14,000                                      | 1,400                              | 10  | Pd. Prop.<br>Owner |

## Bureau of Engineering

CURRENT CONTRACT DATA 1945-1946

| Description                                                               | Contractor              | Awarded | Completed Date | Contract Amount | Amount Expended in 1945-1946 | Fund            |
|---------------------------------------------------------------------------|-------------------------|---------|----------------|-----------------|------------------------------|-----------------|
| <u>B-1 - STREETS - Private Contracts (Cont'd)</u>                         |                         |         |                |                 |                              |                 |
| Ciellito Drive between Geneva Ave. & Parque Drive (Severs, curbs, paving) | The Pay Improvement Co  | 2/21/45 | 7/27/45        | \$ 2,854        | \$ 571 20                    | Pd. Prop. Owner |
| Quintara St. between 43d Ave. & 44th Ave. (Severs, curbs, paving)         | C. L. Harney            | 2/28/45 | 9/28/45        | 5,000           | 4,500 90                     | "               |
| 44th Ave. between Pacheco St. & Quintara St. (Severs, curbs, paving)      | C. L. Harney            | 3/21/45 | 9/28/45        | 16,000          | 9,600 60                     | "               |
| Gates St. - Crescent Ave. 200' South (Severs, curbs, paving)              | The Pay Improvement Co. | 4/25/45 | 7/20/45        | 4,548           | 2,274 50                     | "               |
| 44th Ave. between Ortega St. & Pacheco St. (Severs, curbs, paving)        | C. L. Harney            | 5/9/45  | 9/28/45        | 14,400          | 8,640 60                     | "               |
| 43d Ave. between Pacheco & Quintara Sts. (Severs, curbs, paving)          | C. L. Harney            | 6/27/45 | 9/28/45        | 14,400          | 12,960 90                    | "               |
| Pacheco St. between 43d Ave. & 44th Ave. (Severs, curbs, paving)          | C. L. Harney            | 6/27/45 | 9/28/45        | 5,500           | 4,400 80                     | "               |

## CURRENT CONTRACT DATA 1945-1946

| Description                                                                   | Contractor             | Awarded | Completed Date | Completed % | Contract Amount | Amount Expended in 1945-1946 | Fund                |
|-------------------------------------------------------------------------------|------------------------|---------|----------------|-------------|-----------------|------------------------------|---------------------|
| B-1 - STREETS - Private Contracts (Cont'd)                                    |                        |         |                |             |                 |                              |                     |
| Pacheco St., between 33d Ave. & 34th Ave. (Sewers, curbs, paving)             | C. L. Harney           | 6/27/45 | 1/15/46        | 100         | \$ 5,500        | \$ 5,500                     | 100 Pd. Prop. Owner |
| *Pacheco St. (portions) between 44th Ave. & 45th Ave. (Sewers, curbs, paving) | C. L. Harney           | 6/27/45 | 1/15/46        | 100         | 4,200           | 4,200                        | 100 "               |
| Elmira St. from Thornton Ave. 500' northerly (Sewers, curbs, paving)          | Eaton & Smith          | 8/10/45 | 5/3/46         | 100         | 12,700          | 12,700                       | 100 "               |
| *45th Ave. (portions) between Ortega & Pacheco Sts. (Sewers, curbs, paving)   | C. L. Harney           | 8/10/45 | 1/14/46        | 100         | 11,500          | 11,500                       | 100 "               |
| Arch St. between 204' & 229' south of Randolph St. (Curbs and paving)         | The Fay Improvement Co | 8/24/45 | 9/20/45        | 100         | 300             | 300                          | 100 "               |
| Girard St., south of Ordway (Sewer in easement)                               | E. J. Treacy           | 9/7/45  | 10/22/45       | 100         | 710             | 710                          | 100 "               |
| Quintara St. between 42d & 43d Aves. (Sewers, curbs, paving)                  | C. L. Harney           | 9/28/45 | 1/15/46        | 100         | 6,000           | 6,000                        | 100 "               |

## CURRENT CONTRACT DATA 1945-1946\*

| Description                                                                                            | Contractor              | Awarded  | Completed<br>Date | Contract<br>Amount | Amount<br>Expended in<br>1945-1946 | Fund                |
|--------------------------------------------------------------------------------------------------------|-------------------------|----------|-------------------|--------------------|------------------------------------|---------------------|
| B-1 - STREETS - Private Contracts (Cont'd)                                                             |                         |          |                   |                    |                                    |                     |
| Rickard St. (S $\frac{1}{2}$ ) between San Bruno Ave. and 100' westerly (Curbs and paving)             | E. J. Treacy            | 10/17/45 | 11/9/45           | \$ 700             | \$ 700                             | 100 Pd. Prop. Owner |
| Pioche St. (N $\frac{1}{2}$ ) between Madison and Gambier Sts. (Sewers, curbs, paving)                 | Eaton & Smith           | 10/19/45 | 3/11/46           | 1,400              | 1,400                              | 100 "               |
| Madison St. (W $\frac{1}{2}$ ) between Athens St. 44.64' southerly (Curbs, and paving)                 | Eaton & Smith           | 10/19/45 | 3/11/46           | 700                | 700                                | 100 "               |
| *45th Ave. (portions) between Pacheco & Quintara Sts. (Sewers, curbs, paving)                          | C. L. Harney            | 10/26/45 | 1/15/46           | 12,000             | 12,000                             | 100 "               |
| *Pacheco St. (portions) between 45th & 46th Aves. (Sewers, curbs and paving)                           | C. L. Harney            | 10/26/45 | 1/15/46           | 5,000              | 5,000                              | 100 "               |
| 15th St. between Rhode Island & Carolina Sts. - Crossings De Haro and Carolina Sts. (Curbs and paving) | The Fay Improvement Co. | 11/9/45  | 3/5/46            | 11,100             | 11,100                             | 100 "               |
| 42nd Ave. between Quintara & Rivera Sts. Crossing Quintara St. (Sewers, curbs, paving)                 | C. L. Harney            | 11/23/45 | 6/15/46           | 15,700             | 15,700                             | 100 "               |



## CURRENT CONTRACT DATA 1945-1946

| Description                                                                                                                                                                                                                       | Contractor                | Awarded | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended in<br>1945-1946 | \$  | Fund                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------|-------------------|----------------|--------------------|------------------------------------|-----|---------------------|
| B-1 - STREETS - Private Contracts (Cont'd)                                                                                                                                                                                        |                           |         |                   |                |                    |                                    |     |                     |
| Savoy Street-Sunnydale<br>Ave. 617.10' southerly<br>(Sewers, curbs, paving)                                                                                                                                                       | The Pay<br>Improvement Co | 3/13/46 | 6/6/46            | 100            | \$11,000           | \$ 6,600                           | 60  | Pd. Prop.<br>Owners |
| Pennsylvania Ave. (E <sub>2</sub> )<br>between 20th St. 30C'<br>southerly (grading)                                                                                                                                               | Piombo Bros.              | 3/13/46 | 6/6/46            | 100            | 6,000              | 6,000                              | 100 | "                   |
| Lakeshore Park Sub-<br>division #3 (Sewage<br>pumping station)                                                                                                                                                                    | Eaton & Smith             | 3/15/46 |                   | 15             | 35,000             | 5,250                              | 15  | "                   |
| Sunrise Way 103' East<br>Savoy St. to Wly termina-<br>tion. Crossing Sav-<br>yer St. & intersecting<br>Rahn St. Rahn St. from<br>Sunrise Way 34' Wly.<br>Savoy St. from Velasco<br>Ave. 617.10' Wly. (Sew-<br>ers, curbs, paving) | The Pay<br>Improvement Co | 3/20/46 |                   | 27             | 19,000             | 5,130                              | 27  | "                   |
| Fredson Court- Huron<br>Ave. to Sely. termina-<br>tion (Sewers, curbs,<br>paving)                                                                                                                                                 | The Pay<br>Improvement Co | 3/20/46 |                   | 20             | 5,500              | 1,100                              | 20  | "                   |
| *klat Ave. (portions)<br>between Rivera & San-<br>tiago. 42d Ave. (por-<br>tions) between Rivera<br>& Santiago St. Rivera<br>St. (portions) between<br>klat & 42d Aves. (Sew-<br>ers, curbs, paving)                              | C. L. Harney              | 3/22/46 |                   | 35             | 5,950              | 2,083                              | 35  | "                   |



## CURRENT CONTRACT DATA 1945-1946

| Description                                                                                                               | Contractor             | Awarded | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended in<br>1945-1946 | %  | Fund             |
|---------------------------------------------------------------------------------------------------------------------------|------------------------|---------|-------------------|----------------|--------------------|------------------------------------|----|------------------|
| <u>B-1 STREETS - Private Contracts (Cont'd)</u>                                                                           |                        |         |                   |                |                    |                                    |    |                  |
| *44th Ave. (portions) between Vicente & Wavona Sts. (Sewers, curbs, paving)                                               | E. J. Treacy           | 3/22/46 |                   | 60             | \$10,000           | \$ 6,000                           | 60 | Pd. Prop. Owners |
| *Girard St. between Ordway & Ward Sts. (Sewers, curbs, paving)                                                            | E. J. Treacy           | 3/22/46 |                   | 60             | 5,400              | 3,240                              | 60 | "                |
| Velasco Ave. between Castillo & Calgary Sts Intersections Castillo, Pueblo, Calgary & Sawyer Sts. (Sewers, curbs, paving) | The Fay Improvement Co | 4/1/46  |                   | 50             | 12,800             | 6,400                              | 50 | "                |
| Pueblo St. from Velasco Ave. Sly. to County Line (Sewers, curbs, paving)                                                  | The Fay Improvement Co | 4/12/46 |                   | 40             | 11,150             | 4,460                              | 40 | "                |
| Anzavista Subdivision (streets within) (Sewers, curbs, paving & lighting system)                                          | C. L. Harney           | 5/1/46  |                   | 25             | 216,000            | 54,000                             | 25 | "                |
| Carrazal St. from Parque Drive Sly. to existing pavement. Inter-section of Parque Drive (Sewers, curbs, paving)           | The Fay Improvement Co | 5/1/46  |                   | 10             | 4,747              | 475                                | 10 | "                |

## CURRENT CONTRACT DATA 1945-1946

| Description                                                                             | Contractor                | Awarded | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended in<br>1945-1946 | \$ | Fund                |
|-----------------------------------------------------------------------------------------|---------------------------|---------|-------------------|----------------|--------------------|------------------------------------|----|---------------------|
| B-1 STREETS - Private Contracts (Cont'd)                                                |                           |         |                   |                |                    |                                    |    |                     |
| Castillo St. between<br>Velasco Ave. & Wal-<br>bridge St. (Sewers,<br>curbs, paving)    | The Pay<br>Improvement Co | 5/3/46  | 60                |                | \$11,000           | \$ 6,600                           | 60 | Pd. Prop.<br>Owners |
| Calgary St. between<br>Velasco Ave. & Wal-<br>bridge St. (Sewers,<br>curbs, paving)     | The Pay<br>Improvement Co | 5/3/46  | 50                |                | 11,000             | 5,500                              | 50 | "                   |
| Bryant St. between<br>Alameda & Division<br>Sts. (Sewer)                                | The Pay<br>Improvement Co | 5/3/46  | 0                 |                | 9,450              |                                    | 0  | "                   |
| *39th Ave. (portions)<br>between Rivera & San-<br>tiago Sts. (Sewers,<br>curbs, paving) | C.L. Harney               | 5/10/46 | 15                |                | 11,000             | 1,650                              | 15 | "                   |
| *43d Ave. (portions)<br>between Ulloa & Vi-<br>cente Sts. (Sewers,<br>curbs, paving)    | C.L. Harney               | 5/10/46 | 50                |                | 13,200             | 6,600                              | 50 | "                   |
| Rivera St. between 40th<br>& 41st Aves. (Sewers,<br>curbs, paving)                      | C.L. Harney               | 5/10/46 | 0                 |                | 5,500              |                                    | 0  | "                   |
| Valerton Court (Sew-<br>ers, curbs, paving)                                             | Eaton & Smith             | 5/10/46 | 10                |                | 5,807.50           | 581                                | 10 | "                   |
| *41st Ave. (portions)<br>between Pacheco &<br>Quintara Sts. (Cont'd)                    |                           |         |                   |                |                    |                                    |    |                     |

CURRENT CONTRACT DATA 1945-1946

| Description                                                                                                                                                   | Contractor   | Awarded | Completed<br>Date | Contract<br>Amount | Amount<br>Expended in<br>1945-1946 | Fund                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------|-------------------|--------------------|------------------------------------|-----------------------|
| <u>B-1 STREETS - Private Contracts (Cont'd)</u>                                                                                                               |              |         |                   |                    |                                    |                       |
| (Continued) -42nd Ave.<br>(portions) between<br>Pacheco & Quintara<br>Sts. Pacheco St. (por-<br>tions) between 41st &<br>42d Aves. (Sewers,<br>curbs, paving) | C. L. Harney | 5/24/46 | 10                | \$ 26,000          | \$ 2,600                           | 10 Pd. Prop.<br>Owner |
| 40th Ave. (W <sup>1</sup> ) between<br>93' & 118' S. of Nor-<br>iega St. (Sewers,<br>curbs, paving)                                                           | C. L. Harney | 6/7/46  | 0                 | 325                | 0                                  | "                     |
| Miraloma Park (cer-<br>tain sts. within)<br>(Sewers, curbs, pav-<br>ing & lighting system)                                                                    | C. L. Harney | 6/26/46 | 0                 | 125,000            | 0                                  | "                     |
| Ellsworth St. between<br>225' & 275' S. of<br>Crescent Ave. (Sewers,<br>curbs, paving)                                                                        | E. J. Treacy | 6/26/46 | 0                 | 1,135              | 0                                  | "                     |
| Apparel City<br>(streets within)<br>(Sewers, curbs, paving)                                                                                                   | C. L. Harney | 6/28/46 | 0                 | 147,000            | 0                                  | "                     |
| TOTALS Awarded and Expended during fiscal year                                                                                                                |              |         |                   | \$883,234.50       | \$335,104                          |                       |

\*Remaining portion of street improved under assessment proceedings  
 \*\*W<sup>1</sup> improved under Public Contract - City pay.

## CURRENT CONTRACT DATA 1945-1946

| Description                                                                                                                      | Contractor    | Awarded  | Completed<br>Date | %   | Contract<br>Amount        | Amount<br>Expended in<br>1945-1946 | %   | Fund                        |
|----------------------------------------------------------------------------------------------------------------------------------|---------------|----------|-------------------|-----|---------------------------|------------------------------------|-----|-----------------------------|
| <u>B-2 STREETS - Assessment Proceedings</u>                                                                                      |               |          |                   |     |                           |                                    |     |                             |
| *Silliman St. (N $\frac{1}{2}$ ) between Oxford St. & 120' east (Sewers, curbs, paving)                                          | Eaton & Smith | 6/22/45  | 9/24/45           | 100 | \$ 1,160.00<br>( 738.81+) | \$ 1,160.00                        | 100 | Assessment<br>100 Spec. Rd. |
| *Pacheco St. (S $\frac{1}{2}$ ) between 45th Ave. & 115' east (Sewers, curbs, paving)                                            | C. L. Harney  | 6/22/45  | 1/15/46           | 100 | 1,210.23<br>( 896.84+)    | 1,210.23                           | 100 | "                           |
| Pacheco St.-34th & 35th Aves. (Sewer only) Crossing - 34th-Pacheco (Sewers, curbs, paving)                                       | C. L. Harney  | 6/22/45  | 1/15/46           | 100 | 3,233.25                  | 3,233.25                           | 100 | Assessment                  |
| Crossings Pacheco & 43d Ave., Pacheco & 45th Ave., Quintara & 43d Ave. (Sewers, curbs, paving)                                   | C. L. Harney  | 6/22/45  | 1/15/46           | 100 | 7,232.35<br>-----         | 7,232.35                           | 100 | "                           |
| *45th Ave. (portions) between Ortega & Pacheco Sts. (Sewers, curbs, paving)                                                      | C. L. Harney  | 8/10/45  | 1/14/46           | 100 | 2,890.42<br>( 1,632.73+)  | 2,890.42                           | 100 | Assessment<br>100 Spec. Rd. |
| *45th Ave. (portions) between Pacheco & Quintara Sts. & Pacheco St. (portions) between 45th & 46th Aves. (Sewers, curbs, paving) | C. L. Harney  | 10/26/45 | 1/15/46           | 100 | 2,634.80<br>( 1,541.35+)  | 2,634.80                           | 100 | "                           |

## CURRENT CONTRACT DATA 1945-1946

| Description                                                                                                         | Contractor                | Awarded  | Completed<br>Date | Completed<br>% | Contract<br>Amount        | Amount<br>Expended in<br>1945-1946 | Fund                        |
|---------------------------------------------------------------------------------------------------------------------|---------------------------|----------|-------------------|----------------|---------------------------|------------------------------------|-----------------------------|
| <u>B-2 STREETS - Assessment Proceedings - (Cont'd)</u>                                                              |                           |          |                   |                |                           |                                    |                             |
| Lathrop Ave. between<br>Tunnel & Wheeler Aves.<br>(Sewers, curbs, paving)                                           | C. L. Harney              | 11/30/45 | 3/2/46            | 100            | \$ 2,828.95<br>( 533.79+) | \$ 2,828.95                        | Assessment<br>100 Spec. Rd. |
| Carroll Ave. between<br>3d St. & Jennings St.<br>Including intersec-<br>tion Keith St. (Sew-<br>ers, curbs, paving) | The Fay<br>Improvement Co | 12/5/45  | 4/25/46           | 100            | 11,823.80                 | 11,823.80                          | 100 Assessment              |
| Chester Ave. (W $\frac{1}{2}$ ) be-<br>tween Worcester Ave.<br>& 11.30' S. & other lo-<br>cations (Sidewalks)       | A. Wallgren               | 12/5/45  | 3/3/46            | 100            | 1,726.03                  | 1,726.03                           | 100 "                       |
| 28th Ave. between Pach-<br>eco St. (N/L) & Quin-<br>tara St. (S/L) (Sew-<br>ers, curbs, paving)                     | C. L. Harney              | 12/28/45 | 6/15/46           | 100            | 20,872.78                 | 20,872.78                          | 100 "                       |
| Rivera St. between<br>42d & 43d Aves. includ-<br>ing crossing 42d Ave.<br>(Sewers, curbs, paving)                   | C. L. Harney              | 1/11/46  | 6/15/46           | 100            | 7,732.25<br>( 1,882.94+)  | 7,732.25                           | Assessment<br>100 Spec. Rd. |
| *43d Ave. (E $\frac{1}{2}$ ) between<br>Ortega & Pacheco Sts.<br>(Sewers, curbs, paving)                            | C. L. Harney              | 2/8/46   | 6/15/46           | 100            | 5,055.00                  | 5,055.00                           | 100 Assessment              |
| Pacheco St. between<br>42d & 43d Aves. Cross-<br>ing Pacheco St. & 42d<br>Ave. (Sewers, curbs,<br>paving)           | C. L. Harney              | 3/15/46  | 20                |                | 7,513.20<br>( 2,200.00+)  | 1,500.00                           | Assessment<br>20 Spec. Rd.  |

## CURRENT CONTRACT DATA 1945-1946

| Description                                                                                                                                                                                            | Contractor   | Awarded | Completed Date | Completed % | Contract Amount           | Amount Expended in 1945-1946 | %  | Fund                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------|----------------|-------------|---------------------------|------------------------------|----|----------------------------|
| <u>B-2 STREETS - Assessment Proceedings - (Cont'd)</u>                                                                                                                                                 |              |         |                |             |                           |                              |    |                            |
| *44th Ave. (portions)<br>Vicente to Wavona Sts<br>(Sewers, curbs, paving)                                                                                                                              | E. J. Treacy | 3/22/46 |                | 60          | \$2,150.00<br>( 700.00+)  | \$ 1,290.00                  | 60 | Assessment<br>60 Spec. Rd. |
| *Girard St. (portions)<br>between Ordway &<br>Ward Sts. (Sewers,<br>curbs, paving)                                                                                                                     | E. J. Treacy | 3/22/46 |                | 60          | 1,729.80<br>( 600.00+)    | 1,040.00                     | 60 | "                          |
| *41st Ave. (portions)<br>between Rivera & San-<br>tiago Sts. 42d Ave.<br>(portions) between<br>Rivera & Santiago Sts<br>Rivera St (portions)<br>between 41st & 42d<br>Aves. (Sewers,<br>curbs, paving) | C. L. Harney | 3/22/46 |                | 35          | 5,404.30<br>( 2,800.00+)  | 1,890.00                     | 35 | "                          |
| Rivera St. between<br>38th & 40th Aves.<br>Crossings 38th, 39th<br>& 40th Aves. (Sewers,<br>curbs, paving)                                                                                             | C. L. Harney | 5/10/46 |                | 10          | 21,678.80<br>( 8,000.00+) | 2,168.00                     | 10 | "                          |
| *39th Ave. (portions)<br>between Rivera & San-<br>tiago Sts. (Sewers,<br>curbs, paving)                                                                                                                | C. L. Harney | 5/10/46 |                | 15          | 2,802.70<br>( 800.00+)    | 420.00                       | 15 | "                          |
| *43d Ave. (portions)<br>between Ulloa &<br>Vicente Sts. (Sewers,<br>curbs, paving)                                                                                                                     | C. L. Harney | 5/10/46 |                | 50          | 1,993.50<br>( 800.00+)    | 996.00                       | 50 | "                          |

## CURRENT CONTRACT DATA 1945-1946

| Description                                                                                                                                                                                                 | Contractor   | Awarded | Completed<br>Date | Completed<br>% | Contract<br>Amount       | Amount<br>Expended in<br>1945-1946 | %  | Fund                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------|-------------------|----------------|--------------------------|------------------------------------|----|-------------------------|
| <u>B-2 STREETS - Assessment Proceedings - (Cont'd)</u>                                                                                                                                                      |              |         |                   |                |                          |                                    |    |                         |
| 41st Ave. crossing<br>Pacheco & Rivera<br>Sts. (Sewers,<br>curbs, paving)                                                                                                                                   | C. L. Harney | 5/10/46 |                   | 0              | \$6,151.00               |                                    | 0  | Assessment              |
| *41st Ave. (portions)<br>between Pacheco &<br>Quintara Sts.-42d Ave<br>(portions) between<br>Pacheco & Quintara<br>Sts. -Pacheco St. (por-<br>tions) between 41st<br>& 42d Aves. (Sewers,<br>curbs, paving) | C. L. Harney | 5/24/46 |                   | 10             | 5,044.19<br>( 2,800.00+) | 504.00                             | 10 | Assessment<br>Spec. Rd. |
| 40th Ave. between<br>Quintara & Rivera<br>Sts. (Sever)                                                                                                                                                      | C. L. Harney | 6/19/46 |                   | 0              | 4,782.00<br>( 1,500.00+) |                                    | 0  | " "                     |
| TOTALS Awarded and Expended during fiscal year                                                                                                                                                              |              |         |                   |                | \$114,813.52             | \$78,207.86                        |    |                         |

\*Remaining portion of street improved under Private Contract.

+ Amount paid by City - balance paid by Property Owners.

## CURRENT CONTRACT DATA 1945-1946

| Description                                                                               | Contractor   | Awarded  | Completed<br>Date | Contract<br>Amount | Amount<br>Expended in<br>1945-1946 | \$  | Pund      |
|-------------------------------------------------------------------------------------------|--------------|----------|-------------------|--------------------|------------------------------------|-----|-----------|
| <u>B-3 STREETS - (Public Contract - City Pay)</u>                                         |              |          |                   |                    |                                    |     |           |
| Sunset Blvd. - West<br>lane between Noriega<br>& Ortega Sts. (Emula.<br>asph. seal coat)  | C. L. Harney | 8/31/45  | 11/13/45          | 100 \$             | 508.80                             | 100 | 2d 1/4¢   |
| Sunset Blvd. - East<br>lane between Noriega<br>& Ortega Sts. (Hot<br>oil seal coat)       | C. L. Harney | 10/5/45  | 11/13/45          | 100                | 284.64                             | 100 | 2d 1/4¢   |
| Market St. & 14th<br>St. - S.W. corner<br>(Reconstruct)                                   | E. J. Treacy | 10/19/45 | 12/3/45           | 100                | 924.00                             | 100 | 2d 1/4¢   |
| Portola Drive between<br>San Lorenzo & San<br>Fernando (Remove &<br>trim trees)           | A. D. Canet  | 11/9/45  | 1/30/46           | 100                | 980.00                             | 100 | 2d 1/4¢   |
| 38th Ave. between<br>Rivers St. & San-<br>tiago St. (Remove<br>sand)                      | C. L. Harney | 11/30/45 | 3/18/46           | 100                | 536.00                             | 100 | Spec. Rd. |
| 36th Ave. (W $\frac{1}{2}$ ) be-<br>tween Noriega St. &<br>Ortega St. (Curbs<br>& Paving) | C. L. Harney | 1/11/46  | 2/12/46           | 100                | 4,828.00                           | 100 | Spec. Rd. |
| Pine St. between<br>Kearny St. & Stockton<br>St. (Non-skid surface)                       | C. L. Harney | 2/8/46   | 3/14/46           | 100                | 2,248.00                           | 100 | Spec. Rd. |



CURRENT CONTRACT DATA 1945-1946

| Description                                                                         | Contractor                | Awarded | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended in<br>1945-1946 | Fund          |
|-------------------------------------------------------------------------------------|---------------------------|---------|-------------------|----------------|--------------------|------------------------------------|---------------|
| B-3 STREETS - (Public Contract - City Pay) - (Cont'd)                               |                           |         |                   |                |                    |                                    |               |
| 39th Ave. between<br>Taraval St. & Santiago<br>St. (Removal of sand)                | Piombo Bros.              | 2/8/46  | 6/7/46            | 100            | \$ 995.00          | \$ 995.00                          | 100 Spec. Rd. |
| 28th Ave. & Pacheco St.<br>Crossing (Catchbasin<br>& culvert)                       | C. L. Herney              | 4/17/46 | 6/30/46           | 100            | 218.00             | 218.00                             | 100 General   |
| Bayshore Blvd. between<br>Hester Ave. & 3d St. (Re-<br>move slide material)         | Rosenberg<br>Bros.        | 5/31/46 | 6/27/46           | 100            | 595.00             | 595.00                             | 100 1st 1/4¢  |
| Velasco Ave. (N½) be-<br>tween Castillo & 40'<br>Easterly (Sewers,<br>curb, paving) | The Fay<br>Improvement Co | 5/31/46 |                   | 0              | 3,814.53           |                                    | 0 Spec. Rd.   |
| TOTALS Awarded and Expended during fiscal year                                      |                           |         |                   |                | \$15,931.97        | \$12,117.44                        |               |

## CURRENT CONTRACT DATA 1945-1946

| Description                                                                                                    | Contractor             | Awarded | Completed<br>Date | Contract<br>Amount | Amount<br>Expended in<br>1945-1946 | %   | Fund                |
|----------------------------------------------------------------------------------------------------------------|------------------------|---------|-------------------|--------------------|------------------------------------|-----|---------------------|
| <u>C - TRAFFIC SIGNALS AND CHANNELIZATION</u>                                                                  |                        |         |                   |                    |                                    |     |                     |
| 5th St. & Harrison<br>St. (3-phase traffic<br>actuated signals)                                                | R. Flatland            | 6/29/45 | 12/4/45           | \$ 4,532.98        | \$ 4,532.98                        | 100 | 1st 1/4d            |
| 19th Ave. & Park Pre-<br>sidio Blvd. between<br>Vicente St. & Lake St.<br>(3-light traffic sig-<br>nal system) | Abbott<br>Electric Co. | 9/21/45 | 2/15/46           | 25,492.90          | 25,492.90                          | 100 | 1st 1/4d<br>2d 1/4d |
| Cal. St. at Grant Ave. &<br>Kearny St. (Cable car<br>traffic signals)                                          | R. Flatland            | 12/7/45 | 47                | 5,960.70           | 2,800.00                           | 47  | Spec. Rd.           |
| 19th Ave. between<br>Vicente St. & Junipero<br>Serra Blvd. (3-light<br>traffic signal system)                  | R. Flatland            | 5/31/46 |                   | 14,765.00          |                                    | 0   | 1st 1/4d<br>2d 1/4d |
| Lombard St. & Richard-<br>son Ave. between Lyon<br>St. & Van Ness Ave.<br>(3-light traffic<br>signal system)   | Abbott<br>Electric Co. | 5/31/46 |                   | 25,033.00          |                                    | 0   | 1st 1/4d<br>2d 1/4d |
| TOTALS Awarded and Expended during fiscal year                                                                 |                        |         |                   | \$70,251.60        | \$32,825.88                        |     |                     |

## CURRENT CONTRACT DATA 1945-1946

| Description                                                                                   | Contractor              | Awarded | Completed Date | Completed % | Contract Amount | Amount Expended in 1945-1946 | Fund               |
|-----------------------------------------------------------------------------------------------|-------------------------|---------|----------------|-------------|-----------------|------------------------------|--------------------|
| D-1 SEWERS - PIPE (Vitrified & Concrete)                                                      |                         |         |                |             |                 |                              |                    |
| Laplaya St. between Lincoln Way & Lawton St. (48" concrete pipe)                              | Healy Tibbitts Co.      | 6/6/45  | 1/24/46        | 100         | \$76,274.01     | \$76,274.01                  | 1944<br>Sewer Bds. |
| Paradise Ave. between Elk St. & Burnside St. (8" V.C.P.)                                      | J. Guellid              | 12/5/45 | 3/22/46        | 100         | 5,126.00        | 5,126.00                     | General            |
| Lake Merced Sewer, Sec. "A" (2'-6", 3'-0", 3'-9", 4'-0", 5'-6" Reinforced spun concrete pipe) | Eaton & Smith           | 1/2/46  |                | 93          | 179,676.00      | 168,000.00                   | 1944<br>Sewer Bds. |
| Hubbell St. between 7th St. & 16th St. (18" & 21" V.C.P.)                                     | The Fay Improvement Co. | 1/18/46 | 3/22/46        | 100         | 4,583.75        | 4,583.75                     | General            |
| Locust St. between Jackson St. & the Presidio (18" & 21" V.C.P.)                              | E. J. Treacy            | 3/1/46  | 5/21/46        | 100         | 6,966.26        | 6,966.26                     | General            |
| 48th Ave. between Balboa St. & Cabrillo St. (12" V.C.P.)                                      | Martin Murphy           | 3/13/46 | 5/27/46        | 100         | 9,078.70        | 9,078.70                     | General            |
| Folsom St. between 12th St. & 18th St. (12", 15", 21", 24" V.C.P.)                            | Lowrie Paving Co.       | 3/27/46 |                | 60          | 54,077.60       | 32,200.00                    | General            |

## CURRENT CONTRACT DATA 1945-1946

| Description                                                                                                    | Contractor   | Awarded | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended in<br>1945-1946 | Fund       |
|----------------------------------------------------------------------------------------------------------------|--------------|---------|-------------------|----------------|--------------------|------------------------------------|------------|
| D-1 SEWERS - PIPE (Vitrified & Concrete) - (Cont'd)                                                            |              |         |                   |                |                    |                                    |            |
| Pine St. between Van<br>Ness Ave. & Divisadero<br>St. (8", 12", 15",<br>18" V.C.P.)                            | M. J. Lynch  | 4/3/46  |                   | 21             | \$ 107,931.50      | \$ 23,000.00                       | 21 General |
| Sutter St. between<br>Presidio Ave. &<br>Baker St. (12", 15"<br>V.C.P.)                                        | P. J. Kelly  | 6/12/46 |                   | 0              | 20,996.50          |                                    | 0 General  |
| Francisco Heights<br>Blocks 1083 & 1131<br>(8" V.C.P.)                                                         | P. J. Kelly  | 6/26/46 |                   | 0              | 5,315.00           |                                    | 0 General  |
| St. Charles Ave. be-<br>tween Niantic & Stan-<br>ley Sts. (12", 18",<br>21" V.C.P.; 24",<br>27" concrete pipe) | C. L. Harney | 6/26/46 |                   | 0              | 20,513.50          |                                    | 0 General  |
| TOTALS Awarded and Expended during fiscal year                                                                 |              |         |                   |                | \$ 414,264.31      | \$ 325,228.72                      |            |

CURRENT CONTRACT DATA 1945-1946

| Description                                                                                                        | Contractor             | Awarded  | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended in<br>1945-1946 | %  | Fund               |
|--------------------------------------------------------------------------------------------------------------------|------------------------|----------|-------------------|----------------|--------------------|------------------------------------|----|--------------------|
| <u>D-2 SEWERS - CONCRETE (Monolithic)</u>                                                                          |                        |          |                   |                |                    |                                    |    |                    |
| Lincoln Way at Great Highway (Outfall storm drain) (3-compartment 6'x6')                                           | Healy Tibbitts Company | 3/23/45  |                   | 95             | \$175,263.75       | \$139,500.00                       | 80 | General            |
| Upper Army Sewer System - Sec. "B" 27th St., Guerrero & Army Sts. (6'-6" diameter)                                 | Eaton & Smith          | 5/4/45   | 2/14/46           | 100            | 99,951.00          | 95,550.00                          | 96 | General            |
| Army St. between Valencia & Kansas Sts. & between Army St. & Marin Sts. (Line brick sewer with gunite)             | Cement Gun Company     | 5/11/45  | 9/8/45            | 100            | 41,613.08          | 35,213.00                          | 85 | General            |
| Napoleon St. between Jerrold Ave. & Selby St. (5'-0" diameter - 2'-6" x 3'-9")                                     | Healy Tibbitts Company | 9/19/45  |                   | 97             | 130,649.58         | 127,200.00                         | 97 | 1944<br>Sewer Bds. |
| Ingleside Sewer, Sec. "B" - Urbano Drive between Victoria St. & Ocean Ave. (5'-3", 5'-9" diameter - 2'-6" x 3'-9") | M. J. Lynch            | 10/26/45 |                   | 96             | 128,534.35         | 123,800.00                         | 96 | General            |

## CURRENT CONTRACT DATA 1945-1946

| Description                                                                                                                                                    | Contractor             | Awarded Date | Completed Date | Contract Amount | Amount Expended in 1945-1946 | Fund            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------|----------------|-----------------|------------------------------|-----------------|
| D-2 SEWERS - CONCRETE (Monolithic) - Cont'd                                                                                                                    |                        |              |                |                 |                              |                 |
| Upper Army Sewer System, Sec. A" Church St. between 25th St. & 27th St. (6'-6" x 5'-9" diameter - 2'-3" x 3'-0")                                               | M & K Corp.            | 2/6/46       | 24             | \$ 116,946.50   | \$48,000.00                  | 24 General      |
| Scott St. Sewer System 17th St., Church St. 14th St., Sanchez St., Steiner St. between Treat Ave. & Waller St. (9'-0" x 7'-3" x 5'-9" x 6'-0", 7'-0" diameter) | M & K Corp.            | 2/20/46      | 13             | 796,989.55      | 103,000.00                   | 13 General      |
| Hampshire St. between 25th St. & Army St. (2'-6" x 3'-9")                                                                                                      | M. Murphy              | 3/13/46      | 36             | 37,572.95       | 13,600.00                    | 1944 Sever Bds. |
| Army St. between San Bruno Ave. & Potrero Ave. (8'-6" x 7'-0")                                                                                                 | Healy Tibbitts Company | 5/15/46      | 0              | 79,468.00       | 0                            | General         |
| TOTALS Awarded and Expended during fiscal year                                                                                                                 |                        |              |                | \$1,290,160.93  | \$685,863.00                 |                 |

CURRENT CONTRACT DATA 1945-1946

| Description                                                                        | Contractor                    | Awarded  | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended in<br>1945-1946 | Fund        |
|------------------------------------------------------------------------------------|-------------------------------|----------|-------------------|----------------|--------------------|------------------------------------|-------------|
| <u>E - MISCELLANEOUS</u>                                                           |                               |          |                   |                |                    |                                    |             |
| Richmond-Sunset Sewage<br>Treatment Plant (Addi-<br>tions to grit-grease<br>tanks) | Central Calif.<br>Const'n Co. | 6/15/45  |                   | 38             | \$ 10,518.00       | \$ 4,000.00                        | 38 General  |
| Marina Sewage Pumping<br>Station (Alter 30 <sup>th</sup><br>valve)                 | Central Calif.<br>Const'n Co. | 6/15/45  | 9/15/45           | 100            | 1,148.00           | 1,148.00                           | 100 General |
| Napoleon St. between<br>Selby St. & Jerrold Ave.<br>(Test piles for sewer)         | M. B. McGowan                 | 6/15/45  | 7/16/45           | 100            | 2,103.50           | 2,103.50                           | 100 General |
| Richmond-Sunset Sewage<br>Treatment Plant<br>(Sewage pump)                         | Central Calif.<br>Const'n Co. | 6/22/45  | 2/7/46            | 100            | 3,033.00           | 3,033.00                           | 100 General |
| Log Cabin Ranch Road<br>(Culvert head walls)                                       | M. J. Lynch                   | 8/22/45  | 11/9/45           | 100            | 2,550.00           | 2,550.00                           | 100 General |
| O'Shaughnessy Blvd.<br>near Arroyo Way<br>(Drainage System)                        | R. Flatland                   | 9/14/45  | 1/2/46            | 100            | 10,779.15          | 10,779.15                          | 100 2d 1/4¢ |
| El Camino Del Mar<br>below Fort Miley<br>(Test borings)                            | J. N. Pitcher                 | 10/5/45  | 12/7/45           | 100            | 2,968.42           | 2,968.42                           | 100 2d 1/4¢ |
| 4th St. Bridge at<br>Channel St. (Repair<br>sidewalk bracket &<br>floor beam)      | Shepard &<br>McSweeney        | 10/26/45 | 11/28/45          | 100            | 597.00             | 597.00                             | 100 2d 1/4¢ |

## CURRENT CONTRACT DATA 1945-1946

| Description                                                                              | Contractor              | Awarded  | Completed Date | Contract Amount | Amount Expended in 1945-1946 | Fund              |
|------------------------------------------------------------------------------------------|-------------------------|----------|----------------|-----------------|------------------------------|-------------------|
| <u>E - MISCELLANEOUS - (Cont'd)</u>                                                      |                         |          |                |                 |                              |                   |
| Isala Creek Bridge (Repair south fender)                                                 | Healy Tibbitts Co.      | 11/30/45 | 1/18/46        | \$ 1,685.00     | \$ 1,685.00                  | 100 2d 1/4¢       |
| El Camino Del Mar below Fort Miley (Test borings)                                        | J.N.Pitcher             | 11/30/45 | 2/8/46         | 989.47          | 989.47                       | 100 2d 1/4¢       |
| 3d St. Bridge at Channel St. (Repairs N.E. fender)                                       | Healy Tibbitts Co.      | 12/21/45 | 2/7/46         | 3,740.00        | 3,740.00                     | 100 2d 1/4¢       |
| Pier No. 38 (Access over salt water pump inlet)                                          | Healy Tibbitts Co.      | 3/13/46  | 6/6/46         | 1,425.00        | 1,425.00                     | 100 General       |
| Fitzgerald Ave. Sewage Pumping Station (Install pump)                                    | E. J. Treacy            | 3/20/46  |                | 2,498.80        |                              | 0 General         |
| North Point Sludge Treatment Plant (Test borings - shear, friction, consolidation tests) | J. N. Pitcher           | 5/29/46  |                | 9,217.50        |                              | 1944 0 Sever Bds. |
| Marina Sewage Pumping Station (Lining for steel tanks)                                   | C.R.Reichel             | 6/12/46  |                | 656.50          |                              | 0 General         |
| Richmond-Sunset Sewage Treatment Plant (Enlargement)                                     | Clinton & Anderson-Rove | 6/26/46  |                | 800,197.00      |                              | 1944 0 Sever Bds. |
| TOTALS Awarded and Expended during fiscal year                                           |                         |          |                | \$837,303.84    | \$35,018.54                  |                   |



STREETS AND HIGHWAYS

Although the war terminated shortly after the beginning of the fiscal year, war-created shortages of labor, material, and housing continued to have a retarding effect on our street and highway program. These conditions have largely prevented the undertaking of large major street projects for which plans were complete and funds available.

MAJOR THOROUGHFARESMarket Street between Valencia and Castro Streets

This project was undertaken jointly by the Department of Public Works and the Public Utilities Commission. The work provided for the removal of the two outer streetcar tracks and the complete reconstruction of the two inner tracks. Ties of the outer tracks were removed and the roadway resurfaced. Concrete center islands approximately 120 feet long were constructed at each intersection and raised concrete safety zones were constructed for street car loading. The total cost of the work was \$274,488.15, the Public Utilities Commission's share being \$224,728.88 and the Department of Public Works' share \$49,759.27.

Clipper St. Extension, between Douglass St. & Portola Drive

The contract for this work was awarded on May 29, 1946. The project is 2,300 feet long. The right of way, which is 84 feet wide, will provide four 12-ft. traffic lanes, two 8-ft. parking lanes, and two 10-ft. sidewalks. When completed it will provide a direct connection between the west of Twin Peaks area and the Mission District, via Portola Drive, Clipper Street, and Army Street. The amount of the low bid for the work was \$182,232.75.

Persia Avenue Extension between Mission St. & Ocean Ave.

Contract for this project was awarded May 15, 1946. No work was performed in this fiscal year except the partial clearing of the right of way. When completed it will provide a direct connection



Market Street, before removal of outer tracks



Market Street, after reconstruction  
Showing center islands and loading zones

across Mission Street into Alemany Boulevard via Ocean Avenue and will eliminate two left-hand turns on Mission Street. It is 260 feet long with a right of way 60 feet wide providing two 12-ft. traffic lanes, two 8-ft. parking lanes and two 10-ft. sidewalks. The low bid for the work was \$13,031.70.

Guerrero St. between 14th and Army Sts.

Contract for this project was awarded on June 28, 1946, but no work was performed in this fiscal year. The work provides for the widening of the roadway for a distance of 7,300 feet by reducing the sidewalk width from 15 feet to nine feet. This will allow for the construction of a dividing island four feet wide in the center of the street, four 11.125-ft. traffic lanes, two 8-ft. parking strips, and two 9-ft. walks. All overhead wires will be removed and a new double pendant street lighting system will be constructed on the center island. Concrete gutters will be constructed and the roadway will be resurfaced with asphaltic concrete. The low bid on the work was \$206,221.

STREETS

Improvement Procedure

The original improvement of streets in San Francisco is an obligation of the owners of the property benefitting by the improvement. Improvements are made in accordance with local and State regulations and may be performed under private contract, public contract, or a combination of the two.

Under the private contract method, a permit is granted for the improvement when the owners of all the frontage on the street to be improved have signed with a licensed contractor for the work. If the proposed work involves only sewers or crossing improvements, a permit for construction is granted if a majority of the owners of the property benefitting request the same.

Under the public contract procedure, the cost of the improvement is assessed to the property benefitting. Proceedings for this

work are instituted under a local street improvement ordinance which has been approved by the State Legislature.

A combination of the two methods is employed when more than 60 per cent, but less than 100 per cent, of the property owners in any one block between main intersections have entered into a private contract for the work. With the filing of this contract, the Director of Public Works must, within 30 days, institute public proceedings to improve the unsigned portions of the street under assessment proceedings. Not until after the bids have been received and the work awarded for the public portions will a permit be granted to improve those portions included in the private contract.

#### Street Improvements - 1945-1946

The last year has brought a large increase in the improvement of streets. In addition to the many new subdivisions being improved, the improvement of unpaved streets previously dedicated has been rapidly increasing. At the present rate, all streets through the large sand dune area of the Sunset District should be improved by next year.

A complete list of the new street improvements performed during the year has been given in the tabulation entitled Current Contract Data. The following tabulation indicates the amount of this work performed during the year.

|                                                                                          |        |
|------------------------------------------------------------------------------------------|--------|
| Private contracts granted                                                                | 43     |
| Resolutions of Intention passed for public proceedings                                   | 32     |
| Assessments issued for street work                                                       | 8      |
| Length of streets improved under private contracts and<br>by public proceedings, in feet | 14,096 |

#### Official Grades

To conform to plans prepared for improvement or widening, official grades were changed on:

|                  |         |                               |
|------------------|---------|-------------------------------|
| 26th St.         | between | Guerrero and Fair Oaks Sts.   |
| Army St.         | "       | Guerrero and Dolores Sts.     |
| Third St.        | "       | Marin St. and Arthur Avenue   |
| Tulare St.       | "       | Illinois and Tennessee Sts.   |
| Fifteenth St.    | "       | De Haro and Rhode Island Sts. |
| Rhode Island St. | "       | Alameda and 16th Sts.         |

Official grades were established on Rey Street between Visitacion Avenue and Sunnysdale Avenue, and on Monterey Boulevard between Ridge-wood Avenue and San Anselmo Avenue.

### Sidewalk Widths

Upon investigation it was found desirable to reduce the sidewalk widths on the following listed streets to facilitate traffic movement:

| <u>Street</u>    | <u>Between</u>              | <u>Reduction (ft)</u> |           |
|------------------|-----------------------------|-----------------------|-----------|
|                  |                             | <u>From</u>           | <u>to</u> |
| Powell           | California St. & Broadway   | 12                    | 9         |
| Army             | Potrero Ave. & Guerrero St. | 15                    | 10        |
| Bonview          | Eugenia & Cortland Aves.    | 10                    | 7         |
| Hubbel N/S       | 6th & 7th Sts.              | 15                    | 10        |
| 7th              | Mission & Townsend Sts.     | 15                    | 10        |
| 15th S/S         | De Haro & Rhode Island Sts. | 15                    | 7         |
| Rhode Island W/S | 15th & 16th Sts.            | 15                    | 0         |
| San Jose Ave.    | 30th & Randall Sts.         | 15                    | 10        |

This is a total of 41 City blocks.

### TRAFFIC CONTROL DEVICES

During the past year a good start was made towards obtaining a modern three-light traffic signal system for San Francisco. One large section of State Highway No. 56 has been signalized covering a distance of  $3\frac{1}{2}$  miles, another installation of  $1\frac{1}{2}$  miles in length on State Highway Route No. 2 has been started, and several less extensive installations have been undertaken. The first installation has been such a success in the control and speeding up of traffic that an amount of \$250,000 has been included in the next year's budget for additional installations. Traffic control installations undertaken during this year at various locations are described below.

#### 19th Avenue and Park-Presidio Boulevard

The first 3-light progressive traffic signal system in the City of San Francisco was completed and put into operation in January, 1946. The system covers Park-Presidio Boulevard between Lake and Fulton Streets, By-Pass and Cross-Over Drives in Golden Gate Park connecting Park-Presidio Drive with 19th Avenue at Lincoln Way, and 19th Avenue between Lincoln Way and Vicente Street - a distance

of approximately  $3\frac{1}{2}$  miles. The system includes 102 concrete signal standards with 3-light signal heads, 24 intersection controllers and one master controller, with all necessary underground conduit, wires, and appurtenances. The signals are operating under a progressive "go" signal at a set rate of 30 miles per hour. Traffic maintaining the set speed over this route is seldom required to stop. The cost of the system complete, including conduits previously installed, is approximately \$85,000.

#### 5th and Harrison Streets

The installation of a five-way 3-light traffic actuated signal system was completed at Fifth and Harrison Streets. This location is the terminus of the "off" ramp of the San Francisco-Oakland Bay Bridge. Magnetic detectors placed under the pavement distribute the traffic in the five-point intersection in proportion to the traffic demand on each leg. The system has materially improved the movement of vehicles at this very busy crossing. The contract cost of the installation was \$4,532.98.

#### California Street at Kearny Street and at Grant Avenue

The installation of 3-light cable-car actuated traffic signals is now under way on California Street at Kearny Street and at Grant Avenue. Because of the steepness of the grades on this section of California Street, it is necessary for the cable car to stop in the crossing of these streets. The completion of the signals will give due warning to approaching traffic and correct a dangerous condition. The estimated cost of this work is \$5,865.

#### Lombard Street and Richardson Avenue

On May 31, 1946, a contract was awarded for the installation of a 3-light progressive traffic signal system on Richardson Avenue and Lombard Street between Lyon Street and Van Ness Avenue - a distance of  $1\frac{1}{2}$  miles. No actual construction was started on the installation this year. When completed, the installation will be the same as the one now operating on Park-Presidio Boulevard and 19th Avenue. Including the cost of conduit previously installed, the entire sys-

tem will cost approximately \$40,000.

19th Avenue between Vicente Street and Junipero Serra Blvd.

A contract for the extension of the existing 3-light traffic signal system on 19th Avenue from Vicente Street to Junipero Serra Boulevard (a distance of 1-3/4 miles) was awarded on May 31, 1946, but no construction work was performed this year. This installation will be of the same type as the one now in operation on 19th Avenue. It is estimated to cost \$15,000.

3d Street and Evans Avenue

The heavy flow of traffic from the Hunters Point Navy Yard necessitated the installation of 3-light signals at this crossing. The installation was made by City forces and cost \$1,926.

Bayshore Boulevard and Oakdale Avenue

The installation by the City of 3-light signals at this intersection is now under way. When completed, the traffic will be controlled to allow left-hand turns off and on Bayshore Boulevard. The installation is estimated to cost \$2,750.

BRIDGES

In addition to the fixed highway and street bridges maintained by the Department of Public Works there are four movable span bridges in San Francisco. Three of these are of the bascule type, and the other, located at 6th Street over the Channel Street waterway, is a swing span. This latter bridge has been out of service for several years. During the year, the northeast fender of the Third Street bridge at Channel Street was repaired at a contract cost of \$3,740 and the south fender of the Islais Creek bridge at Third Street was repaired at a contract cost of \$1,685. Minor repairs were made at the Fourth Street bridge.

PLANS FOR FUTURE CONSTRUCTION

During the war years the bureau built up a considerable stock pile of plans for future construction of proposed streets, highways, and bridges. A few of the most important ones programmed

for early construction are mentioned below.

Geneva Avenue Extension - (New Street)

Between Mission Street and Alemany Boulevard.

Estimated cost - \$109,000.

Plans for this project were completed this year. They provide for a direct connection across Mission Street to Alemany Boulevard eliminating two left turns for traffic on Mission Street.

Army Street (Physical Widening)

Between Guerrero Street and Harrison Street.

Estimated cost - \$510,000.

This improvement will complete the widening of Army Street between Bayshore Boulevard and Guerrero Street. When constructed it will serve as one of the principal distribution streets for traffic from the State's proposed Bayshore Freeway. Clearance of the right of way for this project has been delayed pending the easing of the housing shortage in San Francisco.

San Jose Avenue & Guerrero Street (Physical Widening)

Between Army Street and Bernal Avenue.

Estimated cost - \$658,000.

The construction of this project will eliminate one of the worst traffic "bottle-necks" in San Francisco. Like Army Street, the clearing of the right of way is being delayed pending the easing of the housing shortage.

Alemany Boulevard (Reconstruction)

Between Mission Street and a point 3600 feet easterly.

Estimated cost - \$134,000.

Plans for this project provide for the construction of new curbs and the repaving of the roadway.

Portola Drive & Market Street - (Physical Widening & Freeway)

Between 17th Street and St. Francis Circle.

Estimated cost - \$6,400,000.

Length 15,800 feet.

Plans are well under way and some property has been purchased for



the construction of a modern divided highway having six traffic lanes and two parking lanes on Portola Drive between St. Francis Circle and O'Shaughnessy Boulevard. The section between O'Shaughnessy Boulevard and 17th Street is being planned as a freeway.

Calvary and Laurel Hill Tracts

Estimated cost of special street work - \$336,500.

Plans for new streets as listed below have been completed in connection with the subdivision of the old Calvary and Laurel Hill Cemeteries. Geary Street, from Broderick Street to Presidio Avenue, will be widened to 125 feet, and Geary Boulevard will be widened from 125 to 181.25 feet from Presidio Avenue to Masonic Avenue to aid traffic in passing the streetcar barn; Masonic Avenue is to be extended across Geary Boulevard to connect with Bush Street which is being extended. O'Farrell Street is to be extended to meet Anza Street at Masonic Avenue and will connect, via St. Joseph's Avenue, with Geary Street at Baker Street. Presidio Avenue between California Street and Post Street will be widened; and Bush Street will be constructed 80 feet wide from Presidio Avenue to Euclid Avenue. This work is in addition to the normal street development required of the subdivider.

Mission Street from The Embarcadero to South Van Ness Avenue

Roadway to be widened by reducing the sidewalks from 15 to 12 feet. Estimated cost - \$210,000.

Powell Street from California Street to Broadway

Sidewalks will be narrowed from 12 to 9 feet. Estimated cost \$40,000.

7th Street between Townsend and Mission Streets

It is planned to reconstruct the roadway and narrow the sidewalks from 15 to 10 feet. Estimated cost, \$94,000.

Industrial St. between Bayshore Blvd. & Oakdale Avenue

The plans provide for widening of the street to 90 feet. This width will produce a section consisting of two 12-ft. sidewalks, two 8-ft. parking lanes, four 11½-ft. traffic lanes and a 4-ft. center island. The estimated cost is \$94,000, of which \$40,000 will be paid by the City for land acquisition and aid in the assessment.

St. Joseph's Avenue, between Turk & O'Farrell Streets

This street will be improved by the construction of sewers, curbs, pavement and an underground street lighting system. The estimated cost of this work is \$25,000.

Traffic Signals and Channelization

A number of plans for the installation of traffic control devices were completed during the year. This work includes the installation of traffic signals, traffic safety lighting, and traffic channelization devices. A partial list of the work planned follows:

Pine Street at Hyde Street - cable car warning signal.

Estimated cost - \$2,600.

Third Street at Berry Street - channelization and traffic safety lighting.

Estimated cost - \$4,000.

Portola Drive at Woodside Avenue - channelization and traffic safety lighting.

Estimated cost - \$11,000.

Bayshore Boulevard between the County Line and Third Street - channelization, three-light signals and traffic safety lighting.

Estimated cost - \$34,500.

Third Street between Bayshore Boulevard and Custer Avenue - channelization, traffic signals and street lighting conduit.

Estimated cost - \$129,000.

Evans Avenue Bridge at Army Street

Plans were completed for a new reinforced concrete highway bridge to replace the existing wooden bridge on Evans Avenue over the Western Pacific Railway Company's tracks at Army Street. The estimated cost is \$78,000.

Islais Creek Bridge at 3d Street - (New Bascule Bridge)

Plans and specifications for a new double-leaf bascule bridge to replace the 30-year old bridge at this location were completed this year for the City by L.H.Nishkian, Consulting Civil Engineer. The estimated cost of the new bridge is \$1,000,000.

### SEWERS

Substantial progress was made during the year on the long-range program for the rehabilitation and development of the City's sewer system financed from the twelve million dollar 1944 Bond Issue and from tax rate appropriations. Routine pipe sewer construction, as a necessary preliminary to house building, continued in increasing volume in subdivisions and as a part of numerous street improvement projects.

### CONCRETE SEWER CONSTRUCTION

During the fiscal year, seven contracts were let for about four miles of reinforced concrete main sewer. This total included some 5000ft. of centrifugally spun concrete pipe which is used for economy where the need for connections to existing side sewers does not preclude its use. Three of these projects, together with two others, awarded but not completed during the preceding fiscal year, were completed or nearly completed by July 1, 1946.

Most notable was the completion (July 10, 1946) of the Lincoln Way Storm Drain to relieve the overload on the Mile Rock Tunnel and prevent the annual flooding in the La Playa district near the beach. This sewer, consisting of three compartments, each 6 ft. by 6 ft., terminates in an outlet structure protected against debris by a heavy pipe grille and sealed by timber swing gates to prevent the escape of odors or the entry of sand from the beach. A six-inch pipe and hydrant furnish water for sluicing away any large accumulation of sand against the gates which might delay their opening. Special outlet pipes through the gates insure the saturation and removal of sand obstructing their operation. The overflow structure at the sewer junction at 48th Avenue is comparable both in size and complexity to a subway station and is illustrated by the accompanying drawing.

By the award of a three-quarters of a million dollar contract for the Scott Street Sewer, Sections BC-AD, work got well under way



on this major sewer enlargement project to relieve overflowing sewers which have been the source of complaints for many years. This job, which extends 17 blocks from Treat Avenue along 17th Street to Church Street, thence northerly along Church Street across Market Street to 14th Street, thence on 14th Street to Sanchez and up Sanchez Street to Duboce Avenue and up Steiner Street to Waller Street, includes much difficult construction complicated by the presence of underground utilities and street traffic problems, and involves the removal and renewal of the streetcar tracks at Market Street and along Church Street south to 17th Street.

Notable also was the progress to virtual completion of the construction of the first unit, Section "A," of the Lake Merced Sewer System which, by conducting the storm waters to the Ocean, will open up a large area to subdivision developments without danger of pollution of the reserve water supply in Lake Merced.

Completion of the Ingleside Sewer Section "B" was another significant step in relieving valuable property from the hazards of flooding from overburdened sewers.

Particulars of these and other concrete sewer construction projects will be found listed in the tabulation of current contract data.

#### PIPE SEWER CONSTRUCTION

##### Replacements

Work under nine contracts, totaling approximately three miles, began during the fiscal year on jobs involving the replacement of worn-out or inadequate pipe sewers or the provision of additional facilities. Vitrified clay pipe was used except where, as in the case of large concrete sewers, the absence of existing side sewer connections permitted the use of centrifugally spun concrete pipe. Of the projects started, four were completed and the remaining jobs will be completed within the next few months.

Of interest was the reconstruction of the sewer in Locust

Street. One reason for this replacement was a cave-in caused by the failure of the old sewer which resulted in a claim for damages by a garbage collector who unwittingly drove his truck into the cavity.

Replacement of defective sewers in Pine Street now in progress from Divisadero Street to Van Ness Avenue, was done under specifications specially drawn to insure a careful examination of the old sewer. Some blocks of presumably good, though old, sewer were included for comparative purposes. The pipes were carefully uncovered by hand tools, the use of mechanical equipment being discarded at least one foot above the pipe. It is hoped that, from a study of the data disclosed by the examination, criteria can be established which will determine the need for replacement of a sewer which is under suspicion due to previous failures, great age, type of pipe, or steepness of grade. The possibility of unnecessarily reconstructing sound sewers will thus be avoided.

#### Extensions

The improvement of numerous dedicated streets resulted in the planning and partial completion of many sewer extensions having an aggregate length of about three miles.

#### PLANS FOR SEWER CONSTRUCTION

Plans and technical specifications were completed for 18 sewer enlargement or reconstruction projects including several which went to contract during the year.

Among these, the St. Charles Avenue sewer is important as it will divert, to the Richmond-Sunset Treatment Plant that small portion of San Francisco's sewage which at present joins San Mateo County sewage which discharges through the Vista Grande Sever and pollutes the San Francisco beach.

Planning continued on the Lake Merced Sewer System. The general layout of the system was reviewed and the economy of the Fort Funston Outlet, near the Vista Grande tunnel, confirmed after

comparison with a reversed route terminating at the Beach north of the Fort. A tunnel alignment under Fort Funston was selected for the outlet to the ocean and permission requested from the Army authorities for exploratory test borings. Plans for the three-compartment sewer across Lake Merced were revised to the satisfaction of the Public Utilities and Art Commissions. Plans, profiles, and details of special structures were well advanced. An alternative proposal for the use of concrete pipe in Section "E" along Stanley Street was completed. Plans were also prepared for test borings at the Lake Merced Crossing and at the tunnel under Fort Funston.

The route of Section "A" of the Lake Street Sewer System through the Presidio, which had been inaccessible during the war, was surveyed and a shorter and more economical alignment was selected. Application was made for approval of the route by the Army.

#### STUDIES AND REPORTS

A study was made of the hydraulic criteria for determination of sewer sizes, including rainfall intensities and coefficients of run-off, and a report prepared covering design standards.

The necessity of vitrified brick inverts in concrete sewers was investigated and tests of invert samples were undertaken. These tests are not yet completed.

A study was made of the feasibility and economy of postponing the raising of streets and sewers in subsiding areas by pumping the sewage into adjacent high level mains. The report showed pumping to be feasible but too expensive.

The future possibility of treating Daly City's sewage at the Richmond-Sunset Plant was studied and its practicability was determined as well as the most suitable point for reception of this sewage into the San Francisco sewer system.

Investigation was begun as to the advisability of the aban-

donment and removal of the many 3' x 5' brick sewer "wings" encountered at street intersections in sewer construction projects. It is hoped that a policy can be devised which will reconcile economy of construction with proper future maintenance of sewers and streets.

Studies, relative to the need for separate sanitary sewer districts and the future diversion of sanitary sewage to existing and proposed treatment plants, were also started.



Lake Merced Sewer, Section "A"  
Laying 45" centrifugally spun precast concrete pipe



SEWAGE DISPOSALRICHMOND-SUNSET SEWAGE TREATMENT PLANT ENLARGEMENT

Plans, specifications, and estimates for the enlargement of the Richmond-Sunset Plant were completed in April, 1946. On June 26, contracts were awarded to the Clinton Construction Company for the Structural and Architectural work for \$523,900, and to Anderson and Rowe for the Mechanical and Electrical work at a price of \$276,297. These two firms also handled the construction of the original plant in 1937-39

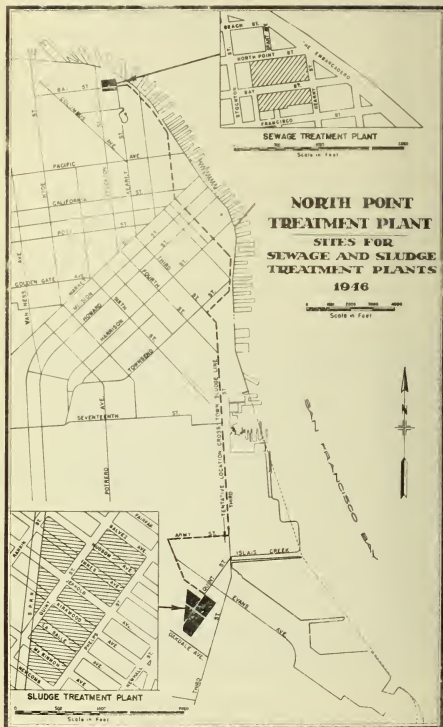
Upon completion of the enlargement, the plant, which is at present overloaded, will have ample capacity to maintain the degree of treatment necessary to prevent contamination of the water at the Ocean beach beyond the safe limit of 10 B-coli per c.c. established by the State Department of Public Health.

A complete account of the work included in the enlargement is to be found at page 20 of the 1944-45 Annual Report, while on pages 22 and 23 appeared aero-perspectives of the plant before and after enlargement.

NORTH POINT SEWAGE TREATMENT PLANT

In accordance with the recommendation of February 7, 1945, by Metcalf & Eddy and Clyde C. Kennedy, consultants, the North Point Plant is to be separated into two parts: first, the Sewage Treatment Plant which is to be in the vicinity of Bay Street and Grant Avenue, where, after removal of the solids by sedimentation, the chlorinated effluent will be discharged at Piers 33 and 35; and second, the Sludge Treatment Plant which is to be situated in the Islais Creek area in the vicinity of Quint Street and Jerrold Avenue. At the Sludge Plant, the sludge, after being pumped about five miles from the Sewage Plant, will be digested, elutriated and dehydrated to yield commercial fertilizer.

After the Board of Supervisors in June, 1945, authorized condemnation suits for the acquisition of the two sites, considerable opposition was voiced by the affected property owners and public



hearings were held by the Board to consider the possibility of finding alternative locations. In August, after the preparation of exhibits and detailed cost estimates for six suggested sites, it was finally concluded that there were no suitable alternatives to the sites advocated by the Director of Public Works.

The two sites are shown on the accompanying Plate. The areas and population to be served by the North Point project are given on page 45 of the 1943-44 Annual Report.

#### SEWAGE TREATMENT PLANT

A number of alternative plant layouts were prepared preliminary to adoption of the most suitable arrangement. Mr. Clyde C. Kennedy, Consultant, advised the use of air for flocculation instead of mechanical paddles and the design proceeded along these lines, including the provision of continuous sludge collecting mechanisms operating from the influent end of the flocculation chamber to the effluent end of the sedimentation tank.

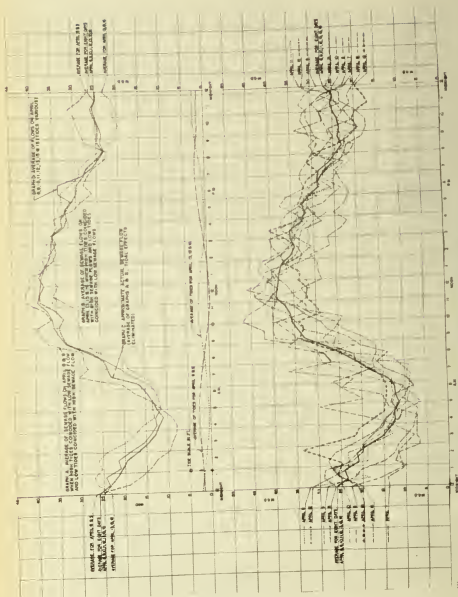
Studies were made of alternative schemes using comminutors following the grit tanks and bar racks preceding the grit tanks. The use of grease removal tanks was abandoned and this function was assigned to the flocculation and sedimentation tanks.

The general arrangement and pump requirements of the sewage lift station, which will raise the flow for treatment in the sedimentation tanks and for discharge to the bay, was decided upon after studies of numerous possible schemes.

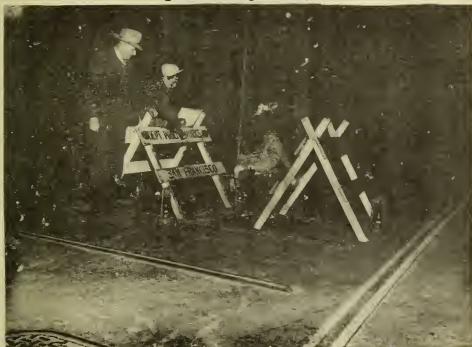
The electrical requirements of the plant were studied and work on the design proceeded using the following basic elements of design:

- (a) 11,000 Volt 3-phase primary voltage
- (b) 2,400 Volt Synchronous Lift Pump Motors (1300 HP)
- (c) 480 Volt Induction Motors for other units (1200 HP)
- (d) 120/240 Volt 3-wire Lighting and Control

Synchronous motors were selected for the sewage lift pumps in order to raise the power factor and reduce power costs.



North Point Sewage Treatment Plant  
Daily sewage flow - Embarcadero & Bay St.



Measuring night sewage flow at  
Lombard and Sansome Sts. in connection with  
North Point Sewage Flow Survey

#### SEWAGE FLOW SURVEY

A thorough field survey was made to determine the quantities and characteristics of the sewage flow in the North Point Main Sewer and the Beach Street Sewer which, with the sewage from the Marina Pumping Station, will constitute the load tributary to the treatment plant. As these sewers are below high tide level, observations were made throughout 24-hour periods carefully selected to give measurements of the maximum and minimum flows at both high and low tides. A study of the results disclosed that the flows measured at high and low tides are respectively smaller than and greater than the true sewage flow, and permitted the development of the actual flow pattern to be expected when tidal action is eliminated by the overflow weirs to be constructed in the influent sewers. The tidal effect is illustrated on the accompanying reproduction of the flow chart.

SLUDGE TREATMENT PLANT

Plans, specifications, and estimates for the North Point Sludge Treatment Plant are under preparation in the engineering offices of Clyde C. Kennedy, Consulting Sanitary Engineer.

HASSLER SEWER INVESTIGATION

A proposal to discharge the sewage from the Emerald Lake District, in San Mateo County, through the outlet sewer maintained by the City from Hassler Health Home Treatment Plant to San Carlos, was investigated. The sewer is operated by the City under restrictions limiting its use to treated sewage. A report was prepared establishing the degree of treatment and sewage works required as a condition for a permit for the proposed use by the district.

TRAFFIC INVESTIGATIONS AND STUDIES

A large number of various types of traffic investigations and studies were made by the Traffic Section during the year, many of them at the request of the San Francisco Police Department.

Broadway Tunnel - Origin and Destination Survey

On November 9, 1945, an origin and destination survey was made of the traffic emanating from and passing through the Central Business District with the object of determining the amount of traffic which would use the proposed tunnel on Broadway between Mason and Larkin Streets. A staff of 50 men stationed at convenient "gateways" stopped all vehicles and handed each driver a self-addressed postal card with a request that he or she answer the questions thereon and drop the card in a mail box. Of the 7,795 cards passed out during the one hour between 5:00 p.m. and 6:00 p.m., 2,065 usable cards were returned within eight days, or about 26 per cent of the total. The cards were sorted by passing through an I.B.M. tabulating machine and the interchange of vehicles between zones recorded. From these figures, estimates were prepared of the probable traffic flow through this proposed tunnel. The study indicated that the proposed tunnel would probably carry about 1000 vehicles during the evening rush hour if completed within the next three years, and would substantially aid in meeting the pressing need for additional arteries to serve the business district.

Curb Parking Survey - Central Traffic District

At the request of the Police Commission a survey of potential curb parking capacity was completed in the Central Traffic District. The object of the survey was to eliminate needless duplications of restricted zones for curb parking. This included no parking zones (curb painted red), loading zones (curb painted yellow) and passenger loading zones (curb painted white). Block maps were prepared of the entire district and recommendations made as to the combining or eliminating of many restricted zones.

## Bureau of Engineering

An interesting fact revealed by the survey was that there were 283 cars parked along the curb per mile of street excluding the crossings. San Francisco's automobile registration shows that there are 250 cars registered for each mile of street. The survey also revealed that approximately 14,000 vehicles curb park in the Central Traffic District during business hours.

### Vehicular Traffic Counts

A number of spot traffic counts were made throughout the City during the year. These were used in re-timing traffic signals in determining the necessity for contemplated boulevard improvements, and in bringing up to date the Vehicular Flow Map prepared in 1937.

### Pedestrian Traffic Counts

Twenty pedestrian traffic counts were made during the year to ascertain the feasibility of reducing sidewalk widths to provide more traffic lanes for vehicles without impairing their use by pedestrians.

### Miscellaneous Traffic Investigations

Approximately 1,000 miscellaneous investigations were made of requests and complaints dealing with traffic conditions. Most of these were transmitted through the Police Department, but a large number were received by the Department of Public Works from citizens and district improvement clubs. They involved investigations, reports, and recommendations on the location of signs, signals, bus zones, traffic striping, and pedestrian cross-walks.



LANDSLIDE CORRECTION

Investigation of landslides and the devising of measures for their correction have occupied much of the attention of the Bureau of Engineering for many years. A number of the areas under observation, or already stabilized, were mentioned in the 1944-1945 Annual Report (p. 26). During the past year, a new slide developed in the bluff on Union Street below Calhoun Street which precipitated considerable material onto Sansome Street below, but caused no serious damage.

O'SHAUGHNESSY BOULEVARD SLIDE

During the fall of 1945, a subdrainage system was installed in a minor slide area on the upper side of O'Shaughnessy Boulevard. This slide, located about 400 feet easterly from Del Vale Avenue and directly below the end of Arroyo Way, had caused frequent upheaval of the roadway subgrade during wet winters with consequent hazards to traffic.

The drainage system consisted of a mainline of 8" perforated vitrified clay pipe laid through the boulevard and extending upward along the contact plane under the slide and approximately along its principal axis, together with two laterals branching off on this southerly side. The pipe with a continuous cover of gravel was laid through short tunnels between shafts about 4' x 6' in section, which were excavated at intervals of 10 to 15 feet. The shafts were back-filled with gravel up to within five feet of the ground surface.

The main line of pipe, including the crossing of the boulevard was 300 feet long, about 170 feet of which was on City property adjacent to the boulevard. The upper portion of the main line and the upper and lower laterals, which were 40 feet and 100 feet in length respectively, were in private property, by virtue of a special right of way agreement with the owner. The depth of the drain at the boulevard is 18 feet and at one point in the slope a maximum depth of 25 feet was reached. Three manholes were installed to permit access for future maintenance work, one being at the upper edge of the

boulevard in the sidewalk area and the others at the junctions of the two laterals with the main drain.

#### EL CAMINO DEL MAR

Shortly after the close of the war, a demand arose for the reopening of El Camino del Mar which had been closed by the military authorities in 1942. This scenic boulevard, constructed through Lincoln Park in the vicinity of Land's End in 1924, crosses a landslide area which has been active for many years. Subsidence and lateral movement of the road became noticeable shortly after construction was completed and in 1941 about \$4,000 was spent for repair work. Early in the spring of 1942 the roadway became practically impassable.

The slide in the direction of movement extends from the building area in Fort Miley to the shore of the Golden Gate, a distance of about 1500 feet, the total fall in that distance being about 340 feet. At the elevation of El Camino del Mar, the slide is divided into two branches, each about 400 feet wide and separated by a rock dyke about 300 feet wide. Portions of the original roadway are now fully five feet below grade and have moved laterally as much as 15 or 20 feet. Traffic across the slide area is prevented by barricades maintained by the Park Department at each end.

In the fall and winter of 1945, 15 6-inch test holes were drilled in the slide to determine the depths to rock and to permit observation of ground-water levels. Eight of the holes were located along the northerly edge of the roadway and the other seven on a contour about 50 feet lower in elevation. A 2-inch pipe, perforated for the bottom 20 feet, was inserted in each completed hole, the annular space was filled with gravel, and the casing then pulled. Readings of water levels have been taken at intervals since completion of the work although some of the pipes have already been so distorted by continuing ground movement that measurement is difficult.

The borings indicate that rock is from 70 to 150 feet below

roadway grade in the slide area, a depth probably too great to permit any type of bridge or trestle construction on solid foundations. Stabilizing of the moving slide would also appear to be difficult and expensive but, to serve as a basis for estimating the cost of a subdrainage system, a complete topographic map of the area has been made. During the ensuing year, conclusions will probably be reached as to the feasibility of restoring the boulevard to use and as to the probable cost of the various measures which could be adopted to accomplish this end.

#### OTHER SLIDES

Records of ground movement at various areas of unstable ground are regularly maintained, including the locations described below.

##### Parker Avenue, south of Anza Street

Movement which continued slowly for some time after completion of the subdrainage system in 1939 has now practically ceased. A preliminary plan has been prepared for reconstructing the street at a somewhat higher level than the original grade and property owners on both sides have been contacted with a view to securing their approval.

##### Union Street, east of Calhoun Terraces

Plans have been prepared for improving surface drainage and strengthening an existing bulkhead for the purpose of arresting further sliding.

##### Diamond Street, north of 22d Street

Measurements of the privately owned retaining wall at this location indicate that outward movement is continuing at the average rate of about  $5/8$  of an inch per year.

##### Bernal Avenue, west side near St. Mary's Avenue

Movement of this slide has been very slight since installation of the Arlington Street intercepting subdrain in 1943. Plans have been prepared for reestablishment of the slope at an early date.

DRAINAGE RECORDS

Records are regularly maintained of the outflow of ground-water through several of the larger subdrainage systems which have been installed in slide areas or unstable ground during the past few years. The following table shows the monthly flow at five such locations as estimated from measurements taken at approximately monthly intervals.

Monthly Drainage Flow in Gallons

|      | <u>Parker Ave.<br/>south of<br/>Anza Street</u> | <u>O'Shaughnessy<br/>Blvd. near<br/>Arroyo Way</u> | <u>Arlington<br/>St. above<br/>Bernal Ave</u> | <u>24th &amp;<br/>Burnham<br/>Sta.</u> | <u>Stonecrest<br/>Subdivi-<br/>sion</u> |
|------|-------------------------------------------------|----------------------------------------------------|-----------------------------------------------|----------------------------------------|-----------------------------------------|
| 1945 |                                                 |                                                    |                                               |                                        |                                         |
| July | 89,400                                          |                                                    | 102,600                                       | 140,400                                | 177,600                                 |
| Aug  | 87,100                                          |                                                    | 99,500                                        | 151,900                                | 175,900                                 |
| Sept | 74,900                                          |                                                    | 91,100                                        | 126,000                                | 163,000                                 |
| Oct  | 67,300                                          |                                                    | 93,600                                        | 139,100                                | 135,100                                 |
| Nov  | 69,900                                          |                                                    | 103,100                                       | 210,800                                | 132,300                                 |
| Dec  | 126,900                                         |                                                    | 120,600                                       | 372,200                                | 242,300                                 |
| 1946 |                                                 |                                                    |                                               |                                        |                                         |
| Jan  | 213,200                                         | *220,300                                           | 129,200                                       | 416,100                                | 280,700                                 |
| Feb  | 200,900                                         | 52,900                                             | 116,100                                       | 185,100                                | 235,800                                 |
| Mar  | 141,800                                         | 48,300                                             | 139,300                                       | 209,200                                | 264,000                                 |
| Apr  | 130,400                                         | 56,400                                             | 125,400                                       | 240,300                                | 251,600                                 |
| May  | 108,500                                         | 14,100                                             | 110,600                                       | 178,600                                | 212,100                                 |
| June | 85,400                                          | 8,300                                              | 106,500                                       | 161,400                                | 197,400                                 |

\*Initial flow following installation of drainage system.

AUXILIARY WATER SUPPLY SYSTEM

The Bureau of Engineering, for many years, has furnished all engineering services required by the Fire Department in connection with its auxiliary water supply system, which provides a high pressure stand-by service for fire protection. During the past year one improvement of existing facilities was completed and three alterations of pipe lines were made in order to accommodate the construction of new sewers. Because of lack of funds no extensions of the system were undertaken during the year.

ACCESS OPENING PIER 38

The intake tunnel leading to Pumping Station #1, as completed in March, 1912, is located near the outer end of Pier 38. Since that date numerous piles for supporting pier extensions were driven in close proximity to the tunnel inlet making it extremely difficult to keep the opening free of mud and debris. No satisfactory means of doing necessary clean-out work was devised except by means of a diver using hand tools.

In the spring of 1946 an opening was constructed in the deck of Pier 38 directly over the tunnel inlet. The opening is provided with a locked sectional steel grating cover strong enough to carry any wheel loads which may be imposed and yet readily removable when required. This opening will make it possible for the Fire Department to use a truck-mounted crane and a clamshell bucket for dredging the area around the intake.

ALTERATIONS AT NAPOLEON STREET

The construction of the new concrete sewer in Napoleon Street required changes in the high pressure pipe line at the crossings of Evans and Jerrold Avenues. At Evans Avenue three lengths of pipe were removed from the existing 12-inch line and a cross-over with air valve was installed at sufficient elevation to clear the new

sewer.

At Jerrold Avenue, an existing "T" in the high-pressure line was moved northerly 2'-6" to give necessary clearance, and the connecting lateral into Napoleon Street was adjusted to correspond. At the same time a high pressure hydrant, on the south side of Napoleon Street about 48 feet easterly from Jerrold Avenue, was moved directly across Napoleon Street to the northerly side.

#### PLANS FOR ADDITIONAL ALTERATIONS

Several street improvement and sewer projects now contemplated will require modification of pipe lines of the Auxiliary Water Supply System and relocation of hydrants. The necessary changes have already been planned in connection with the improvement of Third Street, the widening of Guerrero Street, and the construction of the Scott Street Sewer System.



Jerrold Ave. & Napoleon St.  
Alterations in alignment of 12" M. P. main

### SUBDIVISIONS

The housing shortage and consequent inflation of real estate values following the war brought forth many new subdivisions during the past year. Some of these had been planned for some time, while others were efforts to subdivide tracts previously considered impracticable because of rough topography. In a few instances preliminary maps submitted for approval were of such doubtful design that considerable time and effort were required to recommend necessary changes to make them reasonably feasible.

### TENTATIVE MAPS

Seventeen tentative maps were received from subdividers for review by the Bureau of Engineering and submission to the Director of Public Works for approval. In all cases it was necessary to check not only boundaries and subdivision lines but also street grades, sewer design, and location of catch basins. In the case of one subdivision located northeast of Lake Merced (Lakeshore Park No. 3) the sewer system included the provision of a pumping station for the purpose of lifting sanitary sewage into the high level sewer main leading into the Sunset system. The mechanical and electrical plans and specifications for this plant were checked prior to final approval of the tentative map. The tentative subdivisions received are listed in the following table:

#### Tentative Maps Received July 1, 1945-June 30, 1946

Apparel City  
Anzavista (Calvary Cemetery)  
Assessor's Block 5835 (St. Mary's Park Resubdivision)  
Block 2517 Sloat Boulevard into Blocks:  
2509, 2510, 2511, 2512, and 2518  
Crocker Heights  
Fredson Court  
Grand View Terrace  
Lakeshore Park No. 3  
Laurel Heights (Laurel Hill Cemetery)  
McLaren Heights  
Miraloma Park - Resubdivision of portion of  
Valerton Court  
Perego Heights  
Shangri-La Terrace

Sunnydale Garden  
Sun Valley  
Valerton Court  
Visitacion Valley Lands

#### END OF THE CEMETERIES

The subdivision and development of Calvary and Laurel Hill Cemeteries mark the closing chapter in the history of the four cemeteries which once lay at the foot of Lone Mountain. In 1912, the Board of Supervisors by resolution ordered the removal of the dead from these cemeteries. Disinterment and removal to cemeteries in San Mateo County were carried on from the Masonic, Odd Fellows, and Calvary Cemeteries. The first two were completely vacated and subdivided into residential lots in 1935.

A twenty-eight year struggle to make an historical memorial park of Laurel Hill Cemetery finally failed of its purpose when in 1937 the people voted to require the removal by 1940 of the remains of the pioneers buried within its borders. Some of these remains, first interred in the old North Beach burying ground at Greenwich and Stockton Streets, said to be the original City cemetery, were moved to Yerba Buena Cemetery, then located in a portion of the area occupied by our present Civic Center, and then were again removed to Laurel Hill in the 1850's. When this cemetery was established "far out in the sand dunes so that it would not interfere with the city's growth," the thought was expressed at the time that it would be the "secure and final resting place" of the remains of these pioneers. Fifty-eight years later, in 1912, they were again ordered removed.

Present plans for the new subdivisions call for high-type residential districts. Grading operations preparatory to the construction of streets has already been started.



SURVEYSSUMMARY

Surveys made in the past fiscal year covered approximately 673,665 feet, or 127.5 miles of line, equivalent to about 864 city blocks. Distribution by type of survey was as follows:

|                                          |              |   |
|------------------------------------------|--------------|---|
| Line and Grade for new curbs and paving  | 107,200 feet |   |
| Examinations of Curbs, Paving and Sewers | 31,042       | " |
| Topographic Surveys                      | 143,320      | " |
| Sewers - Line and Grade                  | 96,325       | " |
| Monument Lines                           | 21,660       | " |
| Cross Sections                           | 157,918      | " |
| Subsidence Surveys                       | 107,500      | " |
| Street Closings                          | 8,700        | " |

In connection with the above surveys, 52 monuments were set, checked, referenced or recapped. The above summary does not include the precise level surveys mentioned hereinafter.

PROJECT SURVEYS

The above surveys provided information required for the design of the numerous construction projects undertaken or planned during the year, including principally the following:

Enlargement of Richmond-Sunset Sewage Treatment Plant  
North Point Sewage and Sludge Treatment Plants including surveys of various proposed sites which were finally eliminated  
Sewer and street construction work  
Bernal Cut slope reconstruction  
Mission Street viaduct reconstruction

PRELIMINARY SURVEYS

Surveys for preliminary studies of various types included:

Beach erosion along Great Highway  
Landslide area along El Camino del Mar

Slope north of Alemany Boulevard

Data for official street grade establishment  
in Sunset District and Visitation Valley

Log Cabin Ranch near La Honda

Various landslides

Sanitary Fill

#### PROPERTY SURVEYS

Surveys were made to locate or check property lines for the following:

Encroachments at York and Peralta Streets

Proposed subdivisions

Playgrounds and schools

New Juvenile Detention Home

Radio Stations on Twin Peaks

Closing and widening of public streets

#### PRECISE LEVELS

For the maintenance of established elevations, a total of 1,627 bench marks were set during the year and precise levels were run in the following districts:

|                           |               |
|---------------------------|---------------|
| 50 Vara District          | 5 miles       |
| Mission District          | 6 "           |
| Sunnydale Housing Project | 1-3/4 miles   |
| Twin Peaks                | <u>1 mile</u> |
| Total - -                 | 13-3/4 miles  |

#### SUBSIDENCE SURVEYS

The recognized need for definite information concerning the subsidence of areas in the 50 and 100 Vara districts which were filled during the early days of San Francisco's history prompted the setting of bench marks on the curbs in these areas for a distance of 70,000 lineal feet. Future tests of these benches at regular intervals will furnish valuable data to engineers and builders

relative to the amount and rate of subsidence in these areas. This work will permit the City Engineer's office to answer satisfactorily the many requests made by Engineering Societies, architects, builders, and private engineers for accurate subsidence information.

In addition to the above, subsidence benches were also set on Industrial and Selby Streets from Bay Shore Boulevard to Evans Avenue, a distance of approximately 5,000 feet.

In connection with the subsidence bench marks set in the 50 and 100 Vara districts, an index map and thirty-four 18 by 24-inch location sheets were made as a permanent record upon which subsequent tests may be recorded.

#### NUMBER OF SURVEYS AND FEES RECEIVED

The following tables show the number of surveys performed during the year and the fees received from contractors and others to cover the cost of surveys made:

##### Public Improvement Surveys

|                                       |           |
|---------------------------------------|-----------|
| For Public Contracts                  | 15        |
| For Private Contracts                 | 15        |
| Resurveys for Private Contracts       | 46        |
| For Department of Public Works        | 232       |
| For other City Departments            | <u>12</u> |
| Total Surveys for Public Improvements | 320       |

##### Lot Surveys

|                           |          |
|---------------------------|----------|
| For Private Owners        | 2        |
| For Municipal Departments | <u>7</u> |
| Total Lot Surveys         | 9        |

## Bureau of Engineering

Survey Fees Received

|                 |            |
|-----------------|------------|
| <u>1945</u>     | \$         |
| July            |            |
| August          | 530        |
| September       | 100        |
| October         | 665        |
| November        | 520        |
| December        | 370        |
| <br><u>1946</u> |            |
| January         | 730        |
| February        | 1,065      |
| March           | 1,470      |
| April           | 835        |
| May             | 2,620      |
| June            | <u>205</u> |
| Total . . .     | \$9,110    |

LABORATORY AND TESTING WORKASPHALT AND CONCRETE

Routine inspections of asphalt plants and premix concrete plants furnishing asphalt and concrete on City contracts were made at regular intervals. During the past year, due to the shortage of transportation facilities, the plants experienced difficulty in keeping their stocks of aggregates and sand in sufficient quantities to supply asphalt and concrete when needed. For this reason a close check was kept to see that local bank-sand and crushed stone of inferior quality from local quarries were not stored for use on City contracts.

Samples of concrete were taken from each pour on the various concrete structures during construction, stored under moist conditions, and then tested at seven and twenty-eight days. With very few exceptions, all of the concrete tested well above the specified strength.

Results of 28-day Tests - lbs. per sq. in.

|                    | <u>Average</u> | <u>Maximum</u> | <u>Minimum</u> |
|--------------------|----------------|----------------|----------------|
| Class B (3,000 lb) | 3680           | 5040           | 2840           |
| Class C (3,000 lb) | 3120           | 3330           | 2910           |
| Class E (3,000 lb) | 3230           | 3800           | 2870           |

Precast concrete sewer pipe made by the American Concrete Pipe Company of Oakland was inspected and tested at the plant before being released for shipment to the job for use. Twenty-eight-day compression tests of the mix used in these pipes ranged from 4840 to 5280 lbs. per sq. in.

SEWER JOINT COMPOUND

On one of the pipe sewer contracts, the inspector reported difficulty with the joint compound used for pouring the joints. Upon investigation by the Testing Section, it was found that the contractor was overheating the material in the kettle used to melt the tar which caused the material to coke, thereby reducing the penetration to zero and making the tar extremely brittle. One batch of material was melted each day and not mixed as used, which resulted

in the pure soft tar being used first and the settled filler and over-cooked tar being used at the end of the day. This was remedied by melting smaller quantities of tar and adding fresh batches to the kettle each time a batch was removed for use.

#### ASPHALTIC CONCRETE PAVEMENT

A new type of asphaltic concrete wearing surface, conforming closely to that used in Seattle, was used in Lincoln Way at 48th Avenue. This asphaltic concrete differs from our standard in that it contains little sand and no dust. It produces a skid-proof and water-tight wearing surface. The material, furnished by Chas. L. Harney, was placed with a Barber-Greene spreader. In the conform pavement where hand-raking was necessary, the mix was too harsh and our standard mixture was used. This test section, now open to traffic, is non-skid and shows no signs of raveling.

#### CONCRETE FOR PUBLIC UTILITIES COMMISSION

The Testing Section assisted the Hetch Hetchy Division of the Public Utilities Commission with a survey and tests of available sand and aggregates for concrete materials at Cherry Valley to be used in concrete for the Cherry Valley Dam. Trial batches of concrete were made using these materials and tested at 28 days. This survey is not completed.

#### PAINT

Due to the continued critical shortage of, and the Government restrictions on the use of lacquer and lacquer material for traffic striping, it has been necessary to continue the use of fast-drying paint type formulas. At the request of the Bureau of Architecture, paint used for schools and other City buildings was analyzed for specification requirements.

#### MISCELLANEOUS

Samples of cast iron, wrought iron, steel, brass, bronze, and many other miscellaneous items were checked for physical and chemical properties. At the request of the Fire Marshal, many products and materials were tested for fire resistance in their inves-

tigation of fire hazards.

### SUMMARY.

A summary of the tests made during each of the past two years is shown in the following table:

| <u>Laboratory Tests</u>       |                |                |
|-------------------------------|----------------|----------------|
| <u>Chemical Tests</u>         | <u>1944-45</u> | <u>1945-46</u> |
| Public Utilities Commission   | 10             | 15             |
| Purchaser of Supplies         | 10             | 10             |
| San Francisco Fire Department | 15             | 20             |
| Bureau of Engineering         | <u>5</u>       | <u>10</u>      |
|                               | 40             | 55             |
| <u>Physical Tests</u>         |                |                |
| Public Utilities Commission   | 30             | 120            |
| Department of Public Works    | 75             | 125            |
| Purchaser of Supplies         | 30             | 40             |
| San Francisco Fire Department | 125            | 150            |
| Bureau of Engineering         | <u>40</u>      | <u>100</u>     |
|                               | 300            | 535            |
| <u>Concrete Tests</u>         |                |                |
| Public Utilities Commission   | 66             | 35             |
| Park Commission               | 0              | 5              |
| Recreation Department         | 10             | 5              |
| Bureau of Architecture        | 8              | 10             |
| Bureau of Engineering         | <u>136</u>     | <u>300</u>     |
|                               | 220            | 355            |
| <u>Asphalt Tests</u>          |                |                |
| Public Utilities Commission   | 4              | 6              |
| Recreation Department         | 4              | 4              |
| Department of Public Works    | 10             | 18             |
| Bureau of Engineering         | <u>6</u>       | <u>10</u>      |
|                               | 24             | 38             |
| <u>Paint Tests</u>            |                |                |
| Purchaser of Supplies         | 10             | 7              |
| Bureau of Architecture        | 10             | 8              |
| Bureau of Engineering         | <u>20</u>      | <u>15</u>      |
|                               | 40             | 30             |
| <u>Coal Tar Tests</u>         |                |                |
| Public Utilities Commission   | 8              | 18             |
| Bureau of Engineering         | <u>0</u>       | <u>8</u>       |
|                               | 8              | 26             |
| Totals . . .                  | 632            | 1039           |

SERVICES PERFORMED FOR OTHER BUREAUS AND DEPARTMENTS

The bureau continued the procedure of furnishing technical services to other bureaus within the department and to other departments of the City on request whenever it was possible to do so. In spite of the heavy construction program under way during the past year, it was still possible to provide engineering services of various types to the Bureau of Architecture and to the Bureau of Building Inspection, and also to six other departments.

FOR BUREAU OF ARCHITECTURE

Structural engineering services were furnished at the request of the City Architect in connection with plans for the following building facilities:

San Francisco Hospital -  
General repair and additions.

Chemical Engine Station #12 -  
Complete structural design for new timber framed building.

Building at 460 McAllister Street -  
Structural design and working details for general rehabilitation and improvement of existing building to be used by the City Retirement System.

Log Cabin Ranch under jurisdiction of Juvenile Court -  
Plans, specifications, and estimates for a sewage disposal system, a dairy waste settling tank for the new farm buildings, and a new water supply system including 1400 lineal feet of 4-inch asbestos-cement pipe.

FOR BUREAU OF BUILDING INSPECTION

Structural plans submitted by the Regal Amber Brewing Company were checked in detail as a preliminary to the issuance of the building permit. Several sections of the proposed new building code were reviewed.

FOR SHERIFF'S DEPARTMENT

Several improvements of the sewage treatment plant at the San Francisco County Jail (San Mateo County) were planned and supervised during the year to improve the aeration process at the activated sludge plant. The aeration pump in tank #2 was completely rebuilt to increase its air output. At the same time larger drive



shaft bearings were installed and greasing facilities were added. Circulation and air diffusion in the tank were greatly improved by the installation of a special sheet metal suction housing and an air diffuser tube fitted to the aeration pump. Plans were prepared for portable davits for each of the two tanks to have a lifting capacity of 1,000 pounds each to facilitate the necessary removal of the aeration pumps.

#### FOR DEPARTMENT OF PUBLIC HEALTH

Advice was given on the operation and maintenance of the sewage disposal plant at the Hassler Health Farm. In addition, reports were made to the Department of Public Health on the adequacy of sewage treatment facilities which were proposed to be constructed by private owners adjoining the health farm for the purpose of treating sewage to be admitted to the health farm sewer.

#### SURVEYS

Surveys were made to establish the boundaries of the site for the new Juvenile Detention Home and Municipal Railway Radio Station on Twin Peaks, and several playground and school sites.

#### INSPECTION

Engineers and inspectors, at various times during the year, were placed at the disposal of other City departments to assist them in supervising the construction of types of work familiar to bureau inspectors, such as street paving and sewer construction. Definite assignments of inspectors were made at various times to the Municipal Railway, Recreation Department, and the Water Department.

#### TESTING

The Laboratory and Testing Section made numerous examinations and tests of materials for the Public Utilities Commission, the Purchaser of Supplies, the Fire Department, the Park and Recreation Commissions, the Department of Public Works and the Bureau of Architecture.

POSTWAR STATE AID

At its last two regular sessions, the Legislature of the State of California made funds available to cities and counties of the State to aid them in planning and prosecuting an adequate post-war public works' construction program for the relief of possible unemployment. The 1944 Act appropriated \$10,000,000 for plans and land; the 1946 Act, \$90,000,000 for construction.

PLANS AND LAND

Chapter 47, Statutes of 1944, authorizes the State Director of Finance to defray one-half the cost of engineering, plans, and land purchases for projects to be undertaken in the postwar period by cities, counties, and other political sub-divisions. San Francisco's allocation was \$588,280 for plans and \$249,622 for land. In August, 1945, the City filed preliminary applications for planning funds covering 36 projects proposed by the Department of Public Works. Supplementary data were submitted to the State on November 8, 1945, including preliminary plans and estimates of construction cost. Applications were authorized by resolutions of the Board of Supervisors (Res. 5084 and 5085) and were signed by Thomas A. Brooks, Chief Administrative Officer, who had been designated by the Board as Authorized Agent.

The accompanying tabulation lists the projects covered by the planning fund applications and shows for each one the estimated construction and plan costs, planning funds still to be spent after July 1, 1944 (effective date of the Act), and half of the latter amount, which represents the State aid requested. It will be noted that the estimated construction cost of all projects is \$27,944,000. Amounts requested from the State for planning are segregated as follows:

|                          |                |
|--------------------------|----------------|
| Sever projects           | \$105,900      |
| Sevage disposal projects | 230,000        |
| Highways                 | <u>204,900</u> |
| Total                    | \$540,800      |

APPLICATIONS TO STATE FOR PLANNING FUNDS

| DPW<br>No.                 | SEWER PROJECTS<br>(Res. 5084)                     | Constuction<br>Cost<br>incl.Plans | P l a n C o s t |                   |               |
|----------------------------|---------------------------------------------------|-----------------------------------|-----------------|-------------------|---------------|
|                            |                                                   |                                   | Total           | After<br>July '44 | State<br>Half |
| 1                          | Lake Merced District                              | \$2,600,000                       | \$ 78,000       | \$ 78,000         | \$ 39,000     |
| 2                          | Scott St. District                                | 800,000                           | 24,000          | 8,000             | 4,000         |
| 3                          | Napoleon St.                                      | 150,000                           | 8,000           | 5,000             | 2,500         |
| 4                          | Lower Islais Creek-Alemanay                       | 200,000                           | 6,000           | 1,000             | 500           |
| 5                          | Upper Army St.Dist.Sec.A&C                        | 500,000                           | 15,000          | 2,000             | 1,000         |
| 6                          | Vicente(W Sunset B)Outfall                        | 115,000                           | 3,500           | 1,800             | 900           |
| 7                          | 18th St. Dist. A, B & C                           | 560,000                           | 17,000          | 4,000             | 2,000         |
| 8                          | Lake St. District                                 | 830,000                           | 30,000          | 10,000            | 5,000         |
| 9                          | Islais Creek District                             | 400,000                           | 12,000          | 12,000            | 6,000         |
| 10                         | Jackson St. District                              | 360,000                           | 10,000          | 10,000            | 5,000         |
| 11                         | Lower Market St. District                         | 460,000                           | 12,000          | 12,000            | 6,000         |
| 12                         | Front and Green St. Dist.                         | 140,000                           | 4,000           | 4,000             | 2,000         |
| 13                         | Commercial St. District                           | 140,000                           | 4,000           | 4,000             | 2,000         |
| 14                         | Ingleside Dist.Secs.B&C                           | 250,000                           | 7,500           | 4,000             | 2,000         |
| 15                         | 29th St.Sanchez to SanJose                        | 75,000                            | 3,000           | 3,000             | 1,500         |
| 16                         | Pine & Broderick St.Dist.                         | 75,000                            | 3,000           | 3,000             | 1,500         |
| 17                         | 14th St.Valencia to Dolores                       | 60,000                            | 2,000           | 2,000             | 1,000         |
| 18                         | 23d St. 3d to Iowa                                | 35,000                            | 2,000           | 2,000             | 1,000         |
| 19                         | Hampshire St.25th to Army                         | 27,000                            | 1,600           | 1,600             | 800           |
| 20                         | 46thAve.& Lincoln Divers'n                        | 35,000                            | 2,000           | 2,000             | 1,000         |
| 21                         | 7th St.-Under S.P.Tracks                          | 7,000                             | 400             | 400               | 200           |
| 22                         | Hunters Pt.Sewer Extension                        | 450,000                           | 13,800          | 13,800            | 6,900         |
| 23                         | " " Tunnel                                        | 440,000                           | 13,200          | 13,200            | 6,600         |
| 24                         | Miscellaneous Small Sewers                        | 255,000                           | 15,000          | 15,000            | 7,500         |
| TOTAL - SEWER PROJECTS     |                                                   | \$8,964,000                       | \$287,000       | \$211,800         | \$105,900     |
| SEWAGE DISPOSAL PROJECTS   |                                                   |                                   |                 |                   |               |
| 25                         | Richmond-Sunset Enlargem't                        | 670,000                           | 70,000          | 70,000            | 35,000        |
| 26                         | North Pt. Plant & Outfall                         | 6,790,000                         | 390,000         | 390,000           | 195,000       |
| TOTAL                      |                                                   |                                   |                 |                   |               |
| SEWAGE DISPOSAL PROJECTS   |                                                   | \$7,460,000                       | \$460,000       | \$460,000         | \$230,000     |
| GRAND TOTAL - SEWER AND    |                                                   |                                   |                 |                   |               |
| SEWAGE DISPOSAL PROJECTS   |                                                   | \$16,424,000                      | \$747,000       | \$671,800         | \$335,900     |
| HIGHWAYS                   |                                                   |                                   |                 |                   |               |
| (Res.5085)                 |                                                   |                                   |                 |                   |               |
| 1                          | Army-SanJose Ave.-Guer-<br>rero & Clipper Project | \$ 1,011,000                      | \$ 55,000       | \$ 22,000         | \$ 11,000     |
| 2                          | Islais Creek Bridge                               | 1,100,000                         | 30,000          | 30,000            | 15,000        |
| 3                          | Portola Drive                                     | 3,154,000                         | 173,000         | 140,000           | 70,000        |
| 4                          | Broadway Tunnel                                   | 2,500,000                         | 90,000          | 90,000            | 45,000        |
| 5                          | 13thSt.-Market to Bryant                          | 220,000                           | 13,200          | 13,200            | 6,600         |
| 6                          | Sixth St. Viaduct                                 | 2,700,000                         | 76,000          | 76,000            | 38,000        |
| 7                          | Monterey Blvd.                                    | 245,000                           | 17,500          | 14,255            | 7,127         |
| 8                          | Stanley Underpass                                 | 260,000                           | 15,000          | 10,411            | 5,206         |
| 9                          | Reconstr.Mission Viaduct                          | 220,000                           | 14,000          | 10,934            | 5,467         |
| 10                         | Bayshore Perm.Paving                              | 110,000                           | 6,000           | 3,000             | 1,500         |
| TOTAL HIGHWAYS             |                                                   | \$11,520,000                      | \$489,700       | \$409,800         | \$204,900     |
| GRAND TOTAL - ALL PROJECTS |                                                   | \$27,944,000                      | \$1,236,700     | \$1,081,600       | \$540,800     |

By April 18, 1946, 35 applications in the total amount of \$505,800 had been approved by the State Postwar Public Works Review Board. The Richmond-Sunset Sewage Treatment Plant application for \$35,000 was tentatively held up because the plan cost was in excess of 6% of estimated construction cost, but indications were that the project would ultimately receive approval.

Subsequent to receiving approval of applications, claims were filed on four projects totaling \$7,704.71, of which \$5,204.71 was approved and paid by June 8, 1946. Of the four claims filed, two were final claims of the State's share of the cost of plans for the Hampshire Street and Napoleon Street Sewers. Of the two other claims filed, one was for the first 25% of the plan cost of the Monterey Boulevard project and the other was for the first 50% of the plan cost of the Mission Street Viaduct project.

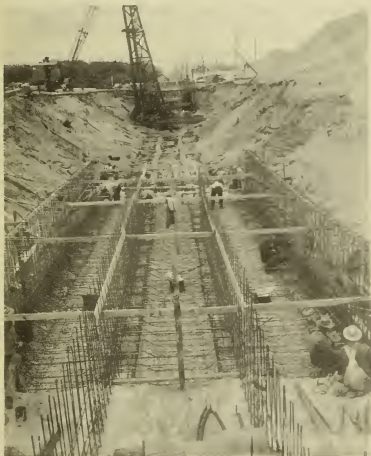
The City also filed an application on April 30, 1945, for State aid in the purchase of land required for the Army Street-San Jose Avenue-Guerrero Street highway project. The amount requested is the full amount of the City's allocation for land purchases; namely, \$249,621.72. Final approval of this application has not been received pending verification of land appraisals.

### CONSTRUCTION

Under Chapter 20, Statutes of 1946, the State of California set up a fund of \$90,000,000 for the aid of cities and counties in constructing postwar public works by defraying one-half the cost of construction including inspection and contingencies. The general allocation to San Francisco was as follows:

|                          |    |                     |
|--------------------------|----|---------------------|
| To County                |    |                     |
| Roads only               | \$ | 398,383.79          |
| Roads and other          |    | <u>2,323,094.09</u> |
|                          |    | \$2,721,477.88      |
| To City of San Francisco |    | <u>5,635,984.88</u> |
| Total Allocation         |    | \$8,357,462.76      |

The first City application for construction funds in the amount of \$409,156 for the Enlargement of the Richmond-Sunset Sewage Treatment Plant was submitted on May 21, 1946. This was a preliminary filing in order that the project might have early priority for review since bids for construction were to be received on June 12th. After some delay, regular forms and rules became available and the City Engineer personally presented the final application in due form at Sacramento on June 26, 1946. It was approved on June 27, 1946, the total amount of contract, inspection, and contingencies being \$923,217, of which the State allotment was \$461,608.50.



Lincoln Way Storm Relief  
Placing reinforcements for 3-compartment  
sewer, each compartment 6' x 6'

GARBAGE DISPOSAL

On December 3, 1945, the ten-year franchise awarded to the Sanitary Fill Company for the disposal of San Francisco's garbage and refuse expired. On March 20, 1946, the Board of Supervisors advertised for bids for a new franchise and requested the City Engineer to prepare suitable instructions to bidders. A "Guide List for Bidders" was issued on March 25, 1946, which was followed on April 10, 1946, by a general report to the Supervisors entitled "Garbage and Refuse Disposal in the City and County of San Francisco." Bids were received on the date set but the franchise was not awarded until after the end of the fiscal year. In the meantime, disposal operations continued on a month to month basis without official sanction.

On April 17, 1946, the City Engineer, with the cooperation of the Sanitary Fill Company, made an examination of the condition of a portion of the fill which had been in place about ten years. The findings were presented in a report dated May 15, 1946, under the title, "Examination of Sanitary Fill."

General information contained in the two reports mentioned above is summarized in the following paragraphs.

CHARACTER OF GARBAGE AND REFUSE

The garbage and refuse collected by licensed refuse collectors within the City and disposed of under franchise awarded by the Supervisors has an approximate weight of about 700 lbs. per cubic yard and has, roughly, the following constituents:

|                  |     |
|------------------|-----|
| Combustibles     | 23% |
| Non-combustibles | 27% |
| Moisture         | 50% |

There is no segregation of this material at the point of collection from householders or business establishments.

COLLECTION OF GARBAGE AND REFUSE

Garbage and refuse is picked up by refuse collectors licensed

by the Director of Public Health and is conveyed by truck to a central point where it is taken over by the disposal agency. The annual collection amounts to about 220,000 tons at the present time. The average monthly collection is about 18,300 tons, but the amount varies considerably with the season, the heaviest daily collections being during the Christmas holidays.

The collection system is operated on a 310-day per year schedule. The average collection per working day is about 710 tons. The maximum is occasionally as high as 800 tons.

About 135,000 separate collections are made each week by means of trucks which carry an average of 3.4 tons per load or about 10 cubic yards. The longest haul is  $7\frac{1}{2}$  miles. About half of the total tonnage collected lies within a three-mile zone from the delivery point.

#### SAN FRANCISCO'S EXPERIENCE WITH GARBAGE DISPOSAL

San Francisco garbage was incinerated from 1897 to 1932. An incinerator of the Thackarey type built in 1897 with a capacity of about 300 tons per day became so heavily overloaded in the late 1920's that it was finally stopped by court order as a nuisance in 1932.

Funds were provided by bond issue in 1914 for the erection of two incinerators under contract but only one was completed and it was not accepted by the city since it failed to meet the specified guarantees. The plant was never operated except for testing purposes.

In 1930, a vote of the people indicated a preference for incineration as compared with other methods of disposal, but the proposed bonds for the construction of a new incinerator failed by a narrow margin to receive the required two-thirds vote.

Since 1932, garbage and refuse has been disposed of by the sanitary fill method. This operation was not specifically authorized until December 3, 1935, at which time a 10-yr. franchise was granted to the Sanitary Fill Company.

FRANCHISE PROVISIONS

The recently expired franchise provides for the delivery of all garbage and refuse to a loading station at 6th and 16th Streets and transportation from that point to the disposal site by railroad car. Transfer from trucks to cars is accomplished by use of a timber loading platform 380 feet long and 16 feet above track grade which permits the loading of 16 gondola cars at one time.

The sanitary fill is placed on tide-lands of the bay immediately south of the San Francisco County line. The filled area is owned by the Southern Pacific Company and is within the Bay Shore Sanitary District of San Mateo County. The Franchise requires that two feet of earth-cover shall be applied with each 4-ft. depth of compressed garbage. The franchise holder, the Sanitary Fill Company, receives payment for disposal services from the San Francisco refuse collectors and is authorized by the franchise to receive for the purpose not more than \$1.00 per ton.

OPERATIONS OF SANITARY FILL COMPANY

During the franchise period, 1936 to 1945, the Sanitary Fill Company received and disposed of 2,078,770 tons of garbage and refuse. The amount varied from a minimum of 177,268 tons in the year 1937 to a maximum of 282,714 tons in 1945. During the period of the war, substantial amounts of material such as packing cases, building material waste, and other discarded material was delivered to the sanitary fill by Army and Navy establishments and various contractors, which accounts for the heavy quantities handled in the last three or four years of the franchise.

To provide cover material, the contractor excavated, hauled and spread 1,525,715 cubic yards of earth and rock. This was equivalent to 0.758 cubic yards of cover per ton of garbage. During the whole period of the franchise, the quantity of earth used was in accurate conformance with the terms of the franchise requiring the



use of two feet of cover for each four feet depth of garbage.

During the 10-year period about 53 acres of newly filled land were created. The area filled parallels the Southern Pacific Railroad track for a distance of approximately 2,100 feet with a width in the east and west direction of approximately 1100 feet. About 33 acres were filled prior to the franchise period, giving a total present reclaimed area of 86 acres, as shown on accompanying map.

Conforming with franchise terms, the Sanitary Fill Company has submitted annual financial statements to the Controller which permit some analysis of unit costs of operation. A summary of these statements is contained in Table I. Table II shows the over-all cost of receiving, transporting, and disposing of garbage and refuse. The average cost for the 10-yr. period is shown to be \$0.96 per ton. The figures for the individual years in Table II indicate a reduction in the unit cost during the last four years, which is accounted for by the substantial amounts of refuse which were delivered directly to the disposal site without cost during the war years. Table III shows the amount of earth-cover used each year and the cost per cubic yard during the last five years of the period. It will be noted that the unit cost shows a general upward trend since 1941.

In general, the operation of the sanitary fill was highly satisfactory from the standpoint of sanitation and absence of nuisance. Garbage was never allowed to accumulate and was completely covered on top, sides, and face at the close of each day's work. No rats have been found at any time and flies are rarely noticeable. Fires are never permitted and, consequently, there is no smoke nuisance and the appearance of the fill itself is not unsightly. The disposal site is in an isolated location and any odors which may develop are normally blown toward the bay by the prevailing winds.



TABLE I

SUMMARY OF ANNUAL FINANCIAL STATEMENTS  
SANITARY FILL COMPANY

| YEAR     | 1936-1945                     |                |                                          |                  |                                   |
|----------|-------------------------------|----------------|------------------------------------------|------------------|-----------------------------------|
|          | <u>Income</u><br><u>Total</u> | <u>Total</u>   | <u>E X P E N S E</u><br><u>Operation</u> | <u>S. P. Co.</u> | <u>Adm. &amp;</u><br><u>Insp.</u> |
| 1936     | \$186,330.95                  | \$185,026.45   | \$126,432.30                             | \$27,000.00      | \$31,594.15                       |
| 1937     | 181,623.55                    | 177,058.99     | 116,713.91                               | 23,695.20        | 36,649.88                         |
| 1938     | 193,719.70                    | 194,125.23     | 120,570.00                               | 30,930.48        | 42,624.75                         |
| 1939     | 201,078.89                    | 194,506.49     | 123,902.88                               | 32,384.88        | 38,218.73                         |
| 1940     | 198,642.05                    | 195,044.95     | 124,687.65                               | 30,283.44        | 40,073.86                         |
| 1941     | 195,359.82                    | 190,649.37     | 118,934.58                               | 32,848.20        | 38,866.59                         |
| 1942     | 183,809.38                    | 184,734.47     | 114,599.39                               | 30,147.04        | 39,988.04                         |
| 1943     | 198,038.43                    | 195,062.03     | 123,987.77                               | 34,847.39        | 36,226.87                         |
| 1944     | 227,361.70                    | 216,781.38     | 136,679.73                               | 41,399.75        | 38,701.90                         |
| 1945     | 264,496.60                    | 250,202.60     | 158,231.36                               | 50,593.11        | 41,378.13                         |
| Totals - |                               |                |                                          |                  |                                   |
|          | \$2,030,461.07                | \$1,983,191.96 | \$1,264,739.57                           | \$334,129.49     | \$384,322.90                      |

TABLE II

COST OF GARBAGE DISPOSAL, 1936-1945

(From Sanitary Fill Company's Records)

| <u>Year</u> | <u>Total Cost</u> | <u>Tons of</u><br><u>Garbage</u> | <u>Cost per ton</u> |
|-------------|-------------------|----------------------------------|---------------------|
| 1936        | \$ 185,026        | 180,583                          | 1.025               |
| 1937        | 177,059           | 177,268                          | 1.00                |
| 1938        | 194,125           | 191,107                          | 1.015               |
| 1939        | 194,506           | 194,594                          | 1.00                |
| 1940        | 195,045           | 197,904                          | .987                |
| 1941        | 190,649           | 196,663                          | .969                |
| 1942        | 184,734           | 198,383                          | .93                 |
| 1943        | 195,062           | 212,928                          | .916                |
| 1944        | 216,781           | 246,626                          | .88                 |
| 1945        | 250,203           | 282,714                          | .885                |
| Total       | \$1,983,190       | 2,078,770                        |                     |
| Average     | \$198,319         | 207,877                          | .954                |

TABLE III  
EARTH COVER

| <u>Year</u> | <u>Amount<br/>Cu.Yds.</u> | <u>Cost</u> | <u>Cost per<br/>Cubic<br/>Yard</u> | <u>Cu.Yds.per<br/>ton of<br/>Garbage</u> | <u>Depth of<br/>Garbage for<br/>2' of earth</u> |
|-------------|---------------------------|-------------|------------------------------------|------------------------------------------|-------------------------------------------------|
| 1936        | 200,095                   |             |                                    | 1.108                                    | 2.58                                            |
| 1937        | 175,780                   |             |                                    | .992                                     | 2.88                                            |
| 1938        | 154,080                   |             |                                    | .806                                     | 3.55                                            |
| 1939        | 168,790                   |             |                                    | .867                                     | 3.30                                            |
| 1940        | 154,705                   |             |                                    | .782                                     | 3.65                                            |
| 1941        | 140,130                   | \$58,311    | \$0.416                            | .712                                     | 4.01                                            |
| 1942        | 137,895                   | 57,660      | 0.418                              | .695                                     | 4.12                                            |
| 1943        | 137,700                   | 57,319      | 0.416                              | .647                                     | 4.41                                            |
| 1944        | 125,530                   | 57,597      | 0.459                              | .509                                     | 5.60                                            |
| 1945        | 131,010                   | 57,692      | 0.440                              | .463                                     | 6.17                                            |
| Total       | 1,525,715                 | \$288,579   |                                    |                                          |                                                 |
| Average     | 152,572                   | \$ 57,716   | \$0.430                            | .734                                     | 3.89                                            |

\*Based on assumption that garbage after placing, covering, and compacting weighs 1400 lbs. per cu. yd.

\*\*On-site costs only.

#### EXAMINATION OF FILL

On April 17, 1946, two test pits each about nine feet deep were dug in a portion of the sanitary fill which had been in place since 1934. Material contained in the garbage layers showed very little evidence of decomposition. Specimens of fruits and vegetables appeared to be practically as fresh as the day they were originally buried. Carrots, corn, lemon and grapefruit peels still retained their original colors. Newspapers, sash cord, jute sacks were in a perfect state of preservation. Tin cans were very bright and were conspicuous because of the absence of rust. Metal showed evidence of deterioration by electrolytic action. Freshly uncovered garbage and refuse yielded a strong decomposing odor which presumably was due to the sudden release of accumulated trapped gases. The temperatures of strata near the bottom of the pit were higher than those near the surface, the difference being about 2° F. in one hole and 10° F. in the other.

OPERATION AND MAINTENANCE OF SEWAGE PUMPING STATIONSEXISTING PUMPING STATIONS

The sewerage system of San Francisco includes at the present time nine pumping stations, one of which forms a part of the Richmond-Sunset Sewage Treatment Plant and is operated by the sewage plant staff. The remaining eight stations are operated under the supervision of the Electrical Section of the Division of Design. The accompanying Table I lists these eight pumping stations and gives pertinent information as to their size, capacity, approximate cost, and function. Details of the operation of the Richmond-Sunset Station are included in the description of the operation of the treatment plant.

The pumping stations are located in low-lying areas of the City which cannot be drained by gravity into existing main sewers. Their capacities are sufficient to handle all sanitary sewage and, in addition, to take care of a portion of rainfall run-off in order to prevent pollution of shore waters by the first scourings from the streets. Generally the stations are provided with overflow spillways so that run-off beyond the capacity of the station is discharged directly into the ocean or bay. In most cases the stations have sufficient capacities so that at least one pumping unit can be shut down to permit repairs.

All of the pumping stations have automatic float controls. At four of the larger stations viz., Marina, Commercial, Sea Cliff No. 2, and Park Merced, operators are on duty during the day period to perform necessary maintenance work and make required adjustments. The operating staff includes:

- 1 Electrical Engineering Inspector
- 2 Operating Engineers
- 3 Junior Operating Engineers

REPAIRS AND REPLACEMENTS

During the past fiscal year major repairs and improvements were made at four of the pumping stations as indicated in the following paragraphs:

Marina Station

Installation of new transite ventilating ducts in place of the original sheet metal ducts, which had deteriorated beyond repair.

Installation of 10 time-delay relays on switchboard to protect the recording instrument against the motor starting currents.

Installation of brass pipe and fittings in place of the original iron pipe and fittings within the sump room.

Cleaning and lining of the following tanks with "Durolin":

1 - Sewage Tank - 72" dia. x 10'0" long

1 - Hydraulic Pressure Tank - 36" dia. x 6'6" long

1 - Air Pressure Tank - 30" dia. x 6'0" long

1 - Seal Water Tank - 30" x 30" x 4'0" high

Commercial Street Station

Installation of a 12" gate shut-off valve in the discharge header, and the rearrangement of Pump #3.

Installation of a high-water alarm system to operate a signal in the nearest fire-house, in case of pump failure during times when the operator is not in attendance.

Parkmerced Station

Installation of a Venturi Tube and a recording, integrating and indicating flow meter in the discharge header, and the rearrangement of Pump No. 4.

Fitzgerald Sewage Pumping Station

This station was relocated and rebuilt under the direction of the National Housing Authority in 1943. It serves the Double Rock Housing Project and that portion of the Bayview District which fronts the bay. Since the station had only one pump, there was no

means of making repairs without interrupting operations.

A new vertical type pumping unit with greater capacity than the original unit has been contracted for. This will leave the old pump available for stand-by service. The new pump is powered by a 15-horsepower motor, runs at a speed of 1150 rpm and has a capacity of 475 gpm against a total dynamic head of 54 feet.

#### ADDITIONAL PLANTS

One additional sewage pumping station is now under construction on the shore of the northerly arm of Lake Merced. The plant forms a part of the sewage system of the Lakeshore Park No. 3 Subdivision and is being built by the contractors engaged by the owners to develop that tract.

Plans are being prepared by the Bureau of Engineering for a new pumping plant to be constructed in the near future by the City at Hyde and Jefferson Streets. This plant when completed will end pollution of the shore waters at Aquatic Park.

Plans are also under way for a pumping station at 48th Avenue and Fulton Street to divert to the Richmond-Sunset Plant the sewage from a small area near the beach which at present escapes untreated to the Golden Gate.

#### OPERATING RECORDS

Tables II to X, inclusive, contain operating records on a monthly basis for each of the pumping stations in service during the past year, except the plant located at the Richmond-Sunset Sewage Treatment Plant, the report on which is included in the report of operations on the treatment plant.

TABLE I  
SEWAGE PUMPING STATION CAPACITIES, ETC

| Name of Station & Location           | No. of Units | Type                      | Size of Pump |      | Actual Total Capacity |        | Rated Horse Power |        | Voltage |        | Speed                                                      |                        | Year Built | Contract Cost | Sewage is Pumped into               |
|--------------------------------------|--------------|---------------------------|--------------|------|-----------------------|--------|-------------------|--------|---------|--------|------------------------------------------------------------|------------------------|------------|---------------|-------------------------------------|
|                                      |              |                           | Discharge    | Head | G.P.M. Each           | Ft.    | 100/60            | 100/60 | 440     | 870    | R.P.M.                                                     | R.P.M.                 |            |               |                                     |
| Marina nr Casa Way                   | 4            | Horizontal                | 10           | 70   | 1350                  | 100/60 | 100/60            | 100/60 | 440     | 870    | 870                                                        | 870                    | 1937       | \$140,000     | N.Pt. Outfall from Pierce St. Sever |
| Park Merced                          | 2            | 2-Horizontal Single Stage | 6            | 131  | 1800                  | 50     | 440               | 1170   | 1944    | 60,000 | Eucalyptus Dr. **                                          | Sever from Stanley St. |            |               |                                     |
| Lake Merced Blvd.                    |              |                           |              | 144  | 2500                  |        |                   |        |         |        |                                                            |                        |            |               |                                     |
| Commercial St. nr Drumm St.          | 3            | Vertical Single Stage     | 6            | 20   | 2100                  | 25     | 220               | 870    | 1905    | 20,000 | N.Pt. Main                                                 | Diversión - 1908       |            |               |                                     |
| Sea Cliff #2 nr Sea Cliff Drive      | 2            | Horizontal Single Stage   | 4            | 29   | 1050                  | 15     | 220               | 1600   | 1945    | 3,550  | Market St. Richmond-Sunset Sever Tunnel at 25th Ave        | 1940                   | 57,500     | & Lake St.    |                                     |
| Vicente at Ot. Highway               | 2            | Vertical Single stage     | 6            | 50   | 900                   | 25     | 230               | 870    | 1928    | 4,500  | Sunset Interceptor from Dist. nr Sloat Blvd. & Ot. Highway |                        |            |               |                                     |
| Fitzgerald nr Griffith St.           | 1            | Vertical Single Stage     | 4            | 47   | 350                   | 15     | 220               | 1750   | 1929    | 1,750  | Sea Cliff Sta. #2 from China Beach Area                    |                        |            |               |                                     |
| Sea Cliff #1 nr Sea Cliff Dr.        | 2            | Vertical Single Stage     | 4            | 51   | 530                   | 15     | 220               | 1150   | 1929    | 1,750  | Sunset Interceptor from Pinalake Park                      |                        |            |               |                                     |
| Pine Lake nr Crestlake & Wavona Drs. | 1            | Vertical Single Stage     | 3            | 57   | 170                   | 5      | 220               | 1750   | 1944    | 1,500  | Sunset Interceptor from Pinalake Park                      |                        |            |               |                                     |
| e-Temporary station.                 |              |                           |              |      |                       |        |                   |        |         |        |                                                            |                        |            |               |                                     |

\*\*Built by Metropolitan Life Ins. Co. \*\*\*Built by Federal Government. All pumps are centrifugal type, motor driven - unless otherwise noted.



TABLE II

MARINA SEWAGE PUMPING STATION

CONTRIBUTING POPULATION - 63,000 DISTRICT AREA - 1,025 ACRES

AVERAGE NET OPERATING HEAD - 38 FT.

| PUMPAGE IN MILLION GALLONS: |                       |                       |                    |                    | Power - K.W.H.                             |                       | K. W. H.                          |
|-----------------------------|-----------------------|-----------------------|--------------------|--------------------|--------------------------------------------|-----------------------|-----------------------------------|
| Month                       | Total<br>per<br>Month | Daily<br>Aver-<br>age | Max.<br>per<br>Day | Min.<br>per<br>Day | Million<br>Foot<br>Gallons<br>per<br>Month | Consumed              | per<br>Million<br>foot<br>Gallons |
|                             |                       |                       |                    |                    |                                            | By Pumps<br>Per Month |                                   |
| July, 1945                  | 106.7                 | 3.440                 | 5.925              | 2.625              | 4055.0                                     | 19665.0               | 4.82                              |
| Aug.                        | 105.5                 | 3.000                 | 3.875              | 2.912              | 4009.0                                     | 19668.0               | 4.81                              |
| Sept.                       | 112.0                 | 3.734                 | 4.425              | 3.140              | 4256.0                                     | 20425.0               | 4.81                              |
| Oct.                        | 151.6                 | 4.890                 | 9.625              | 3.100              | 5761.0                                     | 27810.0               | 4.82                              |
| Nov.                        | 181.7                 | 6.058                 | 8.750              | 4.187              | 6905.0                                     | 33324.0               | 4.82                              |
| Dec.                        | 214.7                 | 6.920                 | 12.300             | 4.225              | 8159.0                                     | 39400.0               | 4.82                              |
| Jan., 1946                  | 186.5                 | 6.015                 | 9.025              | 4.550              | 7087.0                                     | 34121.0               | 4.82                              |
| Feb.                        | 158.2                 | 5.651                 | 7.587              | 4.025              | 6012.0                                     | 29025.0               | 4.83                              |
| March                       | 158.0                 | 5.096                 | 7.125              | 4.525              | 6004.0                                     | 29005.0               | 4.83                              |
| April                       | 156.8                 | 5.227                 | 8.175              | 3.975              | 5958.0                                     | 28802.0               | 4.83                              |
| May                         | 155.7                 | 5.022                 | 7.100              | 3.663              | 5917.0                                     | 28598.0               | 4.83                              |
| June                        | 126.4                 | 4.214                 | 5.250              | 3.075              | 4803.0                                     | 23273.0               | 4.83                              |
| Total<br>Per Year           | 1813.8                | 4.939                 | (Daily<br>Average) |                    | 68926.0                                    | 333116.0              | 4.82<br>(Average)                 |

Average Overall Efficiency of each Pump and its Motor = 64%

TABLE III  
COMMERCIAL STREET SEWAGE PUMPING STATION

| CONTRIBUTING POPULATION - 14,000 |                       |                       |                    | DISTRICT AREA - 92.5 ACRES |                                            |                                      |                                                  |
|----------------------------------|-----------------------|-----------------------|--------------------|----------------------------|--------------------------------------------|--------------------------------------|--------------------------------------------------|
| AVERAGE OPERATING HEAD - 20 FEET |                       |                       |                    |                            |                                            |                                      |                                                  |
| PUMPAGE IN MILLION GALLONS:      |                       |                       |                    | Power - K.W.H.             |                                            | K. W. H.                             |                                                  |
| Month                            | Total<br>per<br>Month | Daily<br>Aver-<br>age | Max.<br>per<br>Day | Min.<br>per<br>Day         | Million<br>Foot<br>Gallons<br>Per<br>Month | Consumed<br>by Pumps<br>Per<br>Month | Consumed<br>by Lights<br>& Auxilia.<br>Per Month |
|                                  |                       |                       |                    |                            |                                            |                                      |                                                  |
| July 1945                        | 37.45                 | 1.21                  | 1.90               | .82                        | 749.0                                      | 5272.0                               | 350.0                                            |
| Aug.                             | 36.09                 | 1.16                  | 1.75               | .78                        | 721.8                                      | 5052.0                               | 370.0                                            |
| Sept.                            | 32.16                 | 1.07                  | 1.61               | .87                        | 643.2                                      | 4410.0                               | 370.0                                            |
| Oct.                             | 37.19                 | 1.20                  | 1.45               | .88                        | 743.4                                      | 5182.0                               | 378.0                                            |
| Nov.                             | 36.68                 | 1.22                  | 1.49               | .93                        | 733.6                                      | 5160.0                               | 394.0                                            |
| Dec.                             | 38.25                 | 1.23                  | 1.41               | .67                        | 765.0                                      | 5412.0                               | 429.0                                            |
| Jan. 1946                        | 37.85                 | 1.22                  | 1.64               | .83                        | 757.0                                      | 5302.0                               | 369.0                                            |
| Feb.                             | 29.67                 | 1.06                  | 1.32               | .74                        | 593.4                                      | 4216.0                               | 296.0                                            |
| March                            | 24.66                 | .80                   | 1.07               | .57                        | 493.2                                      | 3352.0                               | 337.0                                            |
| April                            | 28.75                 | .96                   | 1.02               | .81                        | 575.0                                      | 3730.0                               | 350.0                                            |
| May                              | 22.65                 | .73                   | .92                | .67                        | 453.0                                      | 3090.0                               | 368.0                                            |
| June                             | 21.74                 | .73                   | .91                | .83                        | 434.8                                      | 2812.0                               | 347.0                                            |
| Total                            |                       |                       |                    |                            |                                            |                                      |                                                  |
| Per Year                         | 383.14                | 1.05                  | (Daily<br>Average) |                            | 7662.4                                     | 52990.0                              | 4358.0                                           |
|                                  |                       |                       |                    |                            |                                            |                                      | 6.89<br>(Average)                                |

Average Overall Efficiency of Each Pump and Motor = 45.3%

TABLE IV  
SEACLIFF SEWAGE PUMPING STATION NO. 1

| CONTRIBUTING POPULATION - 50     |                 |                       | DISTRICT AREA - 4 ACRES |              |                |
|----------------------------------|-----------------|-----------------------|-------------------------|--------------|----------------|
| AVERAGE OPERATING HEAD 50.0 FEET |                 |                       |                         |              |                |
| PUMPAGE IN MILLION GALLONS:      |                 |                       |                         |              |                |
| Month                            | Total per Month | Daily Average         | Max. per Day            | Min. per Day |                |
| July, 1945                       | .0410           | .0013                 | Data Not Available      |              |                |
| Aug.                             | .0372           | .0012                 |                         |              |                |
| Sept.                            | .0620           | .0021                 |                         |              |                |
| Oct.                             | .0729           | .0024                 |                         |              |                |
| Nov.                             | .0829           | .0028                 |                         |              |                |
| Dec.                             | .0814           | .0026                 |                         |              |                |
| Jan. 1946                        | .1024           | .0033                 |                         |              |                |
| Feb.                             | .0751           | .0027                 |                         |              |                |
| March                            | .0536           | .0017                 |                         |              |                |
| April                            | .0536           | .0017                 |                         |              |                |
| *May                             | .0289           | .0009                 |                         |              |                |
| June                             | .0562           | .0019                 |                         |              |                |
| Total Per Year                   | .7472           | .0021 (Daily Average) | 37.353                  | 247.0        | 23.0           |
|                                  |                 |                       |                         |              | 6.63 (Average) |

Average Overall Efficiency of Each Pump and Motor = 46.5%

\*Plant shut down for two weeks during may for repairs to inlet line.

K. W. H. per Million foot Gallons

Power - K.W.H. Consumed by Pumps & Auxil.'s. Per Month

Million foot Gallons Per Month

Max. per Day

Daily Average

July, 1945

Aug.

Sept.

Oct.

Nov.

Dec.

Jan. 1946

Feb.

March

April

\*May

June

TABLE V

## SEACLIFF SEWAGE PUMPING STATION NO. 2

CONTRIBUTING POPULATION - 2400

DISTRICT AREA - 83.4 ACRES

## AVERAGE OPERATING HEAD 95.0 FEET

| PUMPAGE IN MILLION GALLONS: |                       |                       |                    | Million<br>Foot<br>Gallons |              | Power - K.W.H.<br>Consumed<br>by Pumps |           | K. W. H.<br>per<br>Million<br>Foot<br>Gallons |              |
|-----------------------------|-----------------------|-----------------------|--------------------|----------------------------|--------------|----------------------------------------|-----------|-----------------------------------------------|--------------|
| Month                       | Total<br>per<br>Month | Daily<br>Aver-<br>age | Max.<br>Per<br>Day | Min.<br>Per<br>Day         | Per<br>Month | Per<br>Month                           | Per Month | Per<br>Month                                  | Per<br>Month |
| July, 1945                  | 3.77                  | .122                  | .159               | .106                       | 377.0        | 2217.0                                 | 1075.0    | 5.87                                          |              |
| Aug.                        | 3.87                  | .125                  | .147               | .106                       | 387.0        | 2265.0                                 | 1145.0    | 5.84                                          |              |
| Sept.                       | 4.36                  | .145                  | .200               | .126                       | 436.0        | 2554.0                                 | 1148.0    | 5.84                                          |              |
| Oct.                        | 5.02                  | .162                  | .364               | .095                       | 502.0        | 2942.0                                 | 1214.0    | 5.84                                          |              |
| Nov.                        | 4.81                  | .160                  | .317               | .050                       | 481.0        | 2818.0                                 | 1211.0    | 5.83                                          |              |
| Dec.                        | 4.27                  | .138                  | .316               | .103                       | 427.0        | 2500.0                                 | 1265.0    | 5.84                                          |              |
| Jan.                        | 4.19                  | .135                  | .471               | .110                       | 419.0        | 2453.0                                 | 1253.0    | 5.83                                          |              |
| Feb.                        | 3.67                  | .131                  | .418               | .063                       | 367.0        | 2143.0                                 | 1168.0    | 5.85                                          |              |
| March                       | 5.91                  | .191                  | .560               | .070                       | 591.0        | 3468.0                                 | 1283.0    | 5.84                                          |              |
| April                       | 4.33                  | .144                  | .172               | .104                       | 433.0        | 2533.0                                 | 1204.0    | 5.83                                          |              |
| May                         | 4.87                  | .157                  | .592               | .132                       | 487.0        | 2853.0                                 | 1228.0    | 5.84                                          |              |
| June                        | 4.15                  | .138                  | .152               | .132                       | 415.0        | 2431.0                                 | 1149.0    | 5.84                                          |              |
| Total<br>Per Year           | 52.22                 | .146                  | (Daily<br>Average) |                            | 5222.0       | 31177.0                                | 14343.0   | 5.84<br>(Average)                             |              |

Average Overall Efficiency of Each Pump and Motor = 50.0%

TABLE VI.

PARKMECED SEWAGE PUMPING STATION

DISTRICT AREA - 83.4 ACRES

CONTRIBUTING POPULATION - 6,600

AVERAGE OPERATING HEAD - 123 FEET

| PUMPAGE IN MILLION GALLONS: |                 |                      |              | Million Foot Gallons Per Month |         | Power - K. W. H. Consumed by Pumps Per Month |         | K. W. H. per Million foot Gallons |  |
|-----------------------------|-----------------|----------------------|--------------|--------------------------------|---------|----------------------------------------------|---------|-----------------------------------|--|
| Month                       | Total per Month | Daily Average        | Max. Per Day | Min. Per Day                   |         |                                              |         |                                   |  |
| July, 1945                  | 10.24           | .330                 | .821         | .172                           | 1260.0  | 6950.0                                       | 2670.0  | 5.50                              |  |
| Aug.                        | 8.92            | .288                 | .680         | .172                           | 1097.0  | 6055.0                                       | 2625.0  | 5.51                              |  |
| Sept.                       | 10.78           | .359                 | .400         | .292                           | 1326.0  | 7310.0                                       | 2490.0  | 5.51                              |  |
| *Oct.                       | 8.01            | .258                 | .410         | .216                           | 985.0   | 5436.0                                       | 2284.0  | 5.52                              |  |
| Nov.                        | 12.70           | .423                 | .896         | .276                           | 1562.0  | 8419.0                                       | 2484.0  | 5.40                              |  |
| **Dec.                      | 4.24            | .137                 | .476         | .137                           | 522.0   | 2866.0                                       | 2651.0  | 5.50                              |  |
| Jan., 1946                  | 11.78           | .390                 | .402         | .013                           | 1449.0  | 7990.0                                       | 2890.0  | 5.51                              |  |
| Feb.                        | 11.11           | .396                 | .627         | .240                           | 1367.0  | 7537.0                                       | 2623.0  | 5.51                              |  |
| March                       | 11.59           | .374                 | .952         | .156                           | 1426.0  | 7858.0                                       | 2822.0  | 5.50                              |  |
| April                       | 11.26           | .375                 | .512         | .356                           | 1385.0  | 7640.0                                       | 2920.0  | 5.52                              |  |
| May                         | 10.40           | .336                 | .430         | .122                           | 1279.0  | 7055.0                                       | 2865.0  | 5.52                              |  |
| June                        | 9.99            | .333                 | .408         | .197                           | 1229.0  | 6773.0                                       | 2547.0  | 5.50                              |  |
| Total Per Year              | 121.02          | .332 (Daily Average) |              |                                | 14887.0 | 81889.0                                      | 31371.0 | 5.50 (Average)                    |  |

Average Overall Efficiency of Each Pump and Motor = 57.0%

\*Station by-passed for 10 days during October for installation of Venturi Tube and Meter.

\*\*Station by-passed for 18 days during December for repairs to discharge pipe.

TABLE VII.

## VICKENTE SEWAGE PUMPING STATION

CONTRIBUTING POPULATION - 1,900

DISTRICT AREA - 51.4 ACRES

AVERAGE OPERATING HEAD 56.0 FEET

| PUMPAGE IN MILLION GALLONS: |                       |                  |                    | Million            |                                 | Power - K. W. H.                     |                                         | K. W. H.                          |  |
|-----------------------------|-----------------------|------------------|--------------------|--------------------|---------------------------------|--------------------------------------|-----------------------------------------|-----------------------------------|--|
| Month                       | Total<br>Per<br>Month | Daily<br>Average | Max.<br>Per<br>Day | Min.<br>Per<br>Day | Foot<br>Gallons<br>Per<br>Month | Consumed<br>By Pumps<br>Per<br>Month | By Lights<br>& Auxiliaries<br>Per Month | Per<br>Million<br>Foot<br>Gallons |  |
|                             |                       |                  |                    |                    |                                 |                                      |                                         |                                   |  |
| July, 1945                  | 3.24                  | .105             | .199               | .096               | 181.4                           | 1255.5                               | 26.5                                    | 6.92                              |  |
| Aug.                        | 4.21                  | .136             | .162               | .108               | 235.8                           | 1625.0                               | 29.0                                    | 6.90                              |  |
| Sept.                       | 3.90                  | .130             | .292               | .124               | 218.4                           | 1506.3                               | 28.7                                    | 6.89                              |  |
| Oct.                        | 6.03                  | .195             | .227               | .119               | 337.7                           | 2322.0                               | 33.0                                    | 6.89                              |  |
| Nov.                        | 4.16                  | .139             | .173               | .113               | 233.0                           | 1590.5                               | 30.5                                    | 6.82                              |  |
| Dec.                        | 3.69                  | .119             | .200               | .103               | 206.6                           | 1425.3                               | 28.7                                    | 6.89                              |  |
| Jan., 1946                  | 4.50                  | .145             | .194               | .119               | 252.0                           | 1734.4                               | 31.6                                    | 6.88                              |  |
| Feb.                        | 3.52                  | .126             | .173               | .097               | 197.1                           | 1360.6                               | 27.4                                    | 6.90                              |  |
| March                       | 3.97                  | .128             | .184               | .103               | 222.3                           | 1533.0                               | 29.0                                    | 6.90                              |  |
| April                       | 3.75                  | .126             | .205               | .103               | 210.0                           | 1440.3                               | 28.7                                    | 6.85                              |  |
| May                         | 4.28                  | .138             | .157               | .113               | 239.7                           | 1651.0                               | 31.0                                    | 6.90                              |  |
| June                        | 4.53                  | .156             | .167               | .119               | 253.7                           | 1752.7                               | 32.3                                    | 6.92                              |  |
| Total<br>Per Year           | 49.78                 | .137             | (Daily<br>Average) |                    | 2787.7                          | 19196.6                              | 356.4                                   | 6.89<br>(Average)                 |  |

Average Overall Efficiency of Each Pump and Motor 45.6%

TABLE VIII.

## FITZGERALD SEWAGE PUMPING STATION

DISTRICT AREA - 30 ACRES

CONTRIBUTING POPULATION - 650

| AVERAGE OPERATING HEAD 46.5 FEET |       |       |                    |       |  |                            |        |                 |      |                   |
|----------------------------------|-------|-------|--------------------|-------|--|----------------------------|--------|-----------------|------|-------------------|
| PUMPAGE IN MILLION GALLONS:      |       |       |                    |       |  | Million<br>foot<br>Gallons |        | Power -- K.W.H. |      | K. W. H.          |
|                                  |       | Total |                    | Daily |  | Max. Min.                  |        | Consumed        |      | Per               |
|                                  |       | Per   |                    | Aver- |  | Per                        |        | By Pumps        |      | Million           |
|                                  |       | Month |                    | age   |  | Day                        |        | Per             |      | Foot              |
|                                  |       | Month |                    | age   |  | Day                        |        | Month           |      | Gallons           |
| Month                            |       |       |                    |       |  |                            |        |                 |      |                   |
| July, 1945                       | 1.07  | .035  | .075               | .030  |  | 49.75                      | 398.0  | 62.0            | 8.00 |                   |
| Aug.                             | 1.23  | .040  | .102               | .033  |  | 57.20                      | 458.0  | 62.0            | 8.01 |                   |
| Sept.                            | 1.08  | .036  | .090               | .032  |  | 50.22                      | 400.0  | 60.0            | 7.97 |                   |
| Oct.                             | 1.23  | .041  | .103               | .038  |  | 57.20                      | 458.0  | 62.0            | 8.03 |                   |
| Nov.                             | 1.51  | .052  | .110               | .043  |  | 70.22                      | 560.0  | 60.0            | 7.98 |                   |
| Dec.                             | 1.71  | .055  | .210               | .050  |  | 79.52                      | 638.0  | 62.0            | 8.03 |                   |
| Jan., 1946                       | 1.55  | .050  | .107               | .043  |  | 72.08                      | 578.0  | 62.0            | 8.02 |                   |
| Feb.                             | 1.67  | .060  | .108               | .054  |  | 77.66                      | 624.0  | 56.0            | 8.03 |                   |
| March                            | 1.76  | .057  | .214               | .053  |  | 81.84                      | 658.0  | 62.0            | 8.04 |                   |
| April                            | 1.62  | .054  | .105               | .044  |  | 75.33                      | 602.0  | 60.0            | 7.99 |                   |
| May                              | 1.60  | .053  | .106               | .043  |  | 74.40                      | 598.0  | 62.0            | 8.04 |                   |
| June                             | 1.39  | .046  | .056               | .044  |  | 64.63                      | 520.0  | 60.0            | 8.05 |                   |
| Total<br>Per Year                | 17.42 | .048  | (Daily<br>Average) |       |  | 810.05                     | 6510.0 | 730.0           |      | 8.02<br>(Average) |

PINELAKE SEWAGE PUMPING STATION

CONTRIBUTING POPULATION - 25

DISTRICT AREA - 3 ACRES

AVERAGE OPERATING HEAD 56.5 FEET

| PUMPAGE IN MILLION GALLONS: |                       | Power - K. W. H. |                    | K. W. H.           |                       |
|-----------------------------|-----------------------|------------------|--------------------|--------------------|-----------------------|
| Month                       | Total<br>Per<br>Month | Daily<br>Average | Max.<br>Per<br>Day | Min.<br>Per<br>Day | Data Not<br>Available |
|                             |                       |                  |                    |                    |                       |
| July, 1945                  | .0228                 | .00073           |                    |                    |                       |
| Aug.                        | .0252                 | .00081           |                    |                    |                       |
| Sept.                       | .0253                 | .00084           |                    |                    |                       |
| Oct.                        | .0240                 | .00077           |                    |                    |                       |
| Nov.                        | .0253                 | .00084           |                    |                    |                       |
| Dec.                        | .0296                 | .00095           |                    |                    |                       |
| Jan., 1946                  | .0284                 | .00091           |                    |                    |                       |
| Feb.                        | .0233                 | .00083           |                    |                    |                       |
| March                       | .0221                 | .00071           |                    |                    |                       |
| April                       | .0206                 | .00068           |                    |                    |                       |
| May                         | .0206                 | .00068           |                    |                    |                       |
| June                        | .0194                 | .00065           |                    |                    |                       |
|                             |                       |                  |                    |                    |                       |
| Total                       | .2866                 | .00078           | (Daily             | 16.191             | 137.0                 |
| Per Year                    |                       |                  | (Average           |                    |                       |
|                             |                       |                  |                    | 8.51               | (Average              |

Average Overall Efficiency of Each Pump and Motor = 37.0%



TABLE X  
SEWAGE PUMPING STATIONS  
COST OF OPERATION  
FISCAL YEAR 1945-46

| Item of Cost                 | STATIONS    |             |                 |                 |             | Fitzgerald | Pinelake |
|------------------------------|-------------|-------------|-----------------|-----------------|-------------|------------|----------|
|                              | Commercial  | Marina      | Sea Cliff No. 1 | Sea Cliff No. 2 | Parkmerced  |            |          |
| Salaries                     | \$ 8,690.00 | \$ 3,490.00 | \$ 90.00        | \$ 3,190.00     | \$ 3,390.00 | \$ 490.00  | \$ 90.00 |
| Contractual Services         | 2,574.25    | 526.25      | 106.25          | 65.25           | 147.75      | 286.25     | 77.75    |
| Equipment Replacements       | 190.00      | 385.00      |                 |                 |             |            |          |
| Materials & Supplies         | 902.00      | 236.00      | 49.00           | 126.00          | 152.00      | 122.00     | 50.00    |
| Heat, Light & Power          | 5,447.50    | 1,184.81    | 5.36            | 910.40          | 2,119.72    | 400.80     | 144.40   |
| TOTAL                        | \$17,803.75 | \$ 5,822.06 | \$ 340.61       | \$4,291.65      | \$ 5,809.47 | \$1,299.05 | \$101.66 |
| Additions & Improvements     | \$ 533.00   | \$ 390.00   |                 |                 | \$ 1,121.00 | \$1,456.00 | \$245.00 |
| Cost of Operation Per M. G.  | \$9.80      | \$15.25     | \$456.00        | \$84.20         | \$48.00     | \$26.50    | \$355.00 |
| Cost of Operation Per Capite | \$ .28      | \$ .41      | \$ 6.80         | \$ 1.79         | \$ .88      | \$ .67     | \$4.75   |

RICHMOND-SUNSET SEWAGE TREATMENT PLANT

The Richmond-Sunset Sewage Treatment Plant has as its primary function the elimination of sewage pollution on recreational beaches and in the shore waters on the north shore westerly from Fort Point, and along the ocean front. The plant treats the sewage from the Richmond and Sunset Districts, the residential areas of the western slope of the city, comprising an area of 6,825 acres, with a contributory population of approximately 200,000 people.

Floating matter, grease and oil, grit, and practically all of the settleable solids are removed in the plant, and the effluent is then chlorinated for bacterial disinfection before being discharged into the ocean at Mile Rock Outfall. The sludge removed from the sewage is subjected to biological digestion, the screenings are incinerated and the grit hauled to a dump for disposal. The digested sludge is then elutriated, dewatered on a vacuum filter, and the resulting filter cake is delivered to the Park Department for use as fertilizer.

SEWAGE FLOWS AND SOLIDS DATA

The total quantity of sewage treated during the year was 3,223.4 million gallons, of which 1,723.2 million gallons flowed to the plant by gravity from the Richmond District, and the balance, 1,500.2 million gallons from the Sunset District, was pumped to the plant inlet by the Sunset pumping plant. The total flow treated increased 245.6 million gallons over the preceding year. The average daily flow for the year was 10.3 million gallons for the actual time of plant operation, an increase of 6 per cent over the previous year. The average daily treated dry and wet weather flows were 9.6 and 10.7 million gallons, respectively. The total quantities removed during the year were: 4,129 cubic feet of screenings, 899 cubic yards of grit, and 3,090 tons of dry sewage solids. The total amount of filter cake produced was 3,927 tons, equivalent to 958 tons of dry solids. The plant delivered 5,125 cubic yards of

this filter cake, estimated to have a value of \$20,500, to City Parks for use as fertilizer, and the balance, 295 cubic yards, was given to the public.

#### PRE-TREATMENT

The bar racks were used continuously throughout the year. Approximately 1.3 cubic feet of screenings were removed per million gallons of sewage treated. The wear plates, pins and bushings on No. 2 bar rack were renewed.

As in previous years, removal of fine grit in the grit-grease tanks was not complete because of excessive flowing-through velocities in tanks Nos. 2 and 3. When the contract which was let at the end of the last fiscal year to equip grit-grease tanks Nos. 1 and 4 is completed it is expected that removal of fine grit will be increased. A new drive chain was installed in No. 2 grit-grease tank and one link was removed from each scraper chain in Nos. 2 and 3 tanks.

A new shaft sleeve was installed on the sand pump and the sleeve bearing remetaled. The discharge nipple between the sand pump and the hose connecting line was replaced.

#### SLUDGE CONTROL AND SEDIMENTATION

During January the flocculation tanks were taken out of service alternately for removal of sand and to permit inspection and adjustment of mechanical equipment. Approximately 20 cubic yards of sand were removed from the west tank, 10 cubic yards from the east tank, and 10 cubic yards from the inlet channel to the Sedimentation Building. Drive chains were shortened and drive pinions adjusted in both tanks, and the baffles reinforced in the west tank. The grease-lubricated bearings in both tanks were found to be in excellent condition.

Sludge pump wearing rings were renewed, when necessary to maintain good pump performance. This was done five times during the year on No. 1 pump and four times on No. 2 pump. In addition,

No.2 pump was overhauled and a new impeller installed; check valves in the discharge lines from both pumps were renewed.

The effluent troughs in both sedimentation tanks were repainted. Three of the four troughs in one sedimentation tank were repainted with a bituminous paint and all the other troughs were coated with a proprietary rust-proof grease compound.

The sedimentation tanks, although now operating at the upper limit of their designed capacity, continued to remove suspended solids quite efficiently. The yearly weighted average suspended solids were 240 ppm\* in the raw sewage and 73 ppm in the plant effluent, an over-all removal of 70 per cent. The corresponding yearly average 5-day biochemical oxygen demands were 230 and 130 ppm, respectively, an over-all removal of 44 per cent.

#### CHLORINATION

The raw sewage was pre-chlorinated continuously for odor control at the rate of 30 pounds of chlorine per million gallons of flow. The plant effluent was chlorinated for disinfection, except during storms or when by-passing the Sunset flow, at a variable rate from 80 to 100 pounds per million gallons to maintain an average residual of 0.5 ppm after a contact period of five minutes. Post-chlorination was very effective in destroying bacteria. During the time it was used the coliform index of the plant effluent averaged less than 10 organisms per millileter, the limit set by the State Department of Public Health for beach waters. The bacteriological examinations of the plant effluent were made weekly by the Department of Public Health.

During March the post chlorinator was taken down, cleaned, and defective parts replaced before reassembling and readjusting. The pre-chlorination controller in the west influent channel which automatically regulates chlorine feed in proportion to sewage flow was overhauled and the float assembly repaired.

\*parts per million

SLUDGE DIGESTION

Since the available digestion space was only about 0.8 cubic feet per capita the single digester was greatly overloaded. Nevertheless, the average volatile content of the sludge removed from the digester was reduced to 67.0 per cent, a reduction of approximately 61 per cent of the volatile matter initially present in the raw sludge pumped to the digester. The procedure instituted last year of pumping bottom sludge over the top of the scum layer through each of the connections at the two digester manhole covers in order to both soften and seed the scum layer was continued during the year. This appeared to help in seeding and promoting better digestion in this layer.

Gas production continued quite uniformly throughout the year; leakage of gas through the digester seals was at a minimum. During dry weather months metered gas production averaged 150,000 cubic feet per day, or approximately 0.8 cubic feet per day per capita of connected population.

The Heat exchange capacity of the hot water coils in the digester decreased, presumably from increasing scale deposition on the coils. It was not possible to maintain average digester temperature higher than 83°F. even though inlet water temperature to the heating coils in the digester was increased to 143°F. The hot water supply in the digester to the east bank of heat exchangers failed in December. The leaking section was blanked off and replaced with a hot water service rubber hose connected from the end of the exchanger header over the top of the digester to the inlet line outside the digester, as had been done previously when a similar leak developed in the supply to the west bank of heat exchangers.

The seeding pump impeller, wearing rings, shaft bearings and shaft sleeves were renewed and the coupling in No. 4 turbo mixer was repaired.

ELUTRIATION AND SLUDGE FILTRATION

All sludge withdrawn from the digester was washed in the elutriation tanks, using counter-current flow. Plant effluent was used as wash water in the ratio of approximately three volumes to one volume of sludge. Elutriation reduced the alkalinity of the digested sludge from an average of 2020 ppm to an average of 400 ppm, a reduction of 80 per cent. During January sand deposits in the elutriation tanks sump and mixers were removed and chains and flights were inspected and adjusted. The elutriated sludge bucket elevator was calibrated for delivery four times during the year.

The vacuum filter operated regularly throughout the year. The average amount of ferric chloride on dry solids required was reduced to 4.37 per cent. The filter cloth was replaced twice and a new scraper blade was installed. Deposits of iron oxide and scale on the filter screen were removed when the cloths were replaced by rotating the drum for about eight hours in an approximately 20 per cent hydrochloric acid solution inhibited with aniline oil. The ferric chloride pump impeller, shaft, volute, packing gland and gland assembly were renewed and the coupling replaced in the vacuum filter blower.

SUNSET PUMPING PLANT

The pumping plant was by-passed as usual during storms, and for fourteen days in August for installation of sewage pump No. 4. The sump was pumped down daily and flushed to prevent accumulation of deposits when the plant was in operation.

The No. 1 sewage pump was completely overhauled. A new volute, wearing rings, shaft radial bearings and shaft sleeve were installed and the end plates built up with metal and then machined to shape. The impeller key and key retainer on No. 2 sewage pump were also renewed.

The contract for installing No. 4 sewage pump was completed in February and the pump put into service. This pump is a combina-

tion grit and sewage pump. When it is operating it is not necessary to use the Sunset sand pump and sand washer. Accordingly, No. 4 sewage pump is operated from 8:00 a.m. to 6:00 p.m. when velocities in the force main from the pumping plant to the Pre-Treatment Building are high enough to prevent deposition of grit; the sand pump and sand washer are operated the balance of the day.

The sand pump was overhauled and the suction line from the drainage pit to the pump was renewed. Two links were removed from the sand scraper chain.

#### LABORATORY

For the control of plant operation the laboratory completed a total of approximately 11,000 routine analyses during the year. These included daily determinations of solids and volatile content of raw, digested and elutriated sludges; solids content of filter cake; the pH of digested sludge and filter cake; alkalinities of digested and elutriated sludges; suspended solids, alkalinities and chlorides of raw sewage and plant effluent on 24-hour composites; digester gas densities; and the assay of the ferric chloride solutions used for sludge coagulation. Five-day biochemical oxygen demands were determined bi-weekly on 24-hour composites of raw sewage and plant effluent.

Studies on the distribution of solids in the digester and the effects of withdrawal and circulation of sludge on stratification and scum formation were made to maintain a satisfactory solids balance.

Additional studies were made on the effect of flocculation on sedimentation, and the occurrence and characteristics of the sand deposits in the various plant units were investigated. Composite samples of raw sewage and plant effluent collected by the automatic sewage samplers, recently installed, are being compared and correlated with regular manually collected samples.

Research toward the improvement of laboratory techniques in

analysis was carried on, and with the acquisition of equipment still on order it is expected that the laboratory will contribute more than ever to the efficient control of plant operation.

#### GENERAL MAINTENANCE AND IMPROVEMENTS

The painting program completed during the year included the following:

- Pre-Treatment Building - metal window frames, interior piping and equipment
- Sludge Control House - interior piping and equipment
- Main Building - metal window frames, door exteriors, vacuum filter equipment, and basement air ducts

The hangers for the main folding doors in the Pre-Treatment and Main Buildings were strengthened and re-aligned.

In the Main Building paint lockers were constructed in the main storeroom, and No. 1 air compressor was relocated to provide an emergency standby for operating the hoist on the Sunset diversion gate.

The installation of two automatic sewage samplers, one to collect samples of raw sewage and the other of plant effluent, both in proportion to flow, was completed in May.

An auxiliary effluent flow indicator was installed in the Pre-Treatment Building chlorinator room to permit better control of post-chlorination feed.

#### PLANT PERSONNEL

- 1 Superintendent
- 1 Assistant Superintendent and Chemist
- 1 Chief Operating Engineer
- 1 Clerk-Stenographer
- 5 Operating Engineers
- 5 Junior Operating Engineers
- 1 Chauffeur
- 2 Laborers

The plant operates 24 hours a day on a 3-shift basis.

#### OPERATING SUMMARIES

Operating data for the fiscal year are given in tables 1 to 4 which follow the tabulation entitled "Cost of Operation."



RICHMOND-SUNSET SEWAGE TREATMENT PLANTCOST OF OPERATION

| <u>Item of Expenditure</u>                                 | <u>Total Plant Operation</u> | <u>Sewage Treatment with Chlorination</u> | <u>Sunset Pumping Plant</u> | <u>Sludge Disposal Conditioning &amp; Filtration</u> | <u>Sewage Treatment without Chlorination</u> |
|------------------------------------------------------------|------------------------------|-------------------------------------------|-----------------------------|------------------------------------------------------|----------------------------------------------|
| Permanent Salaries                                         | \$46,679                     | \$30,424                                  | \$5,866                     | \$10,389                                             | \$27,069                                     |
| Holidays                                                   | 829                          | 573                                       | 89                          | 167                                                  | 525                                          |
| Overtime                                                   | 43                           | 43                                        |                             |                                                      | 39                                           |
| Temporary Salaries                                         | 2,352                        | 1,697                                     | 226                         | 429                                                  | 1,566                                        |
| Wages                                                      | 6,373                        | 3,078                                     | 701                         | 2,794                                                | 2,748                                        |
| Contractual Services                                       | 4,966*                       | 3,439                                     | 761                         | 766                                                  | 3,248                                        |
| Heat, Light & Power                                        | 10,757                       | 5,212                                     | 4,900                       | 645                                                  | 4,812                                        |
| Materials & Supplies                                       | 21,012*                      | 15,925                                    | 1,627                       | 3,460                                                | 6,817                                        |
| Totals                                                     | \$93,211                     | \$60,391                                  | \$14,170                    | \$18,650                                             | \$46,924                                     |
| Richmond Flow (gravity) 1,723 MG                           |                              |                                           |                             |                                                      |                                              |
| Sunset Flow (pumped) 1,500 "                               |                              |                                           |                             |                                                      |                                              |
| Total                                                      |                              |                                           |                             |                                                      |                                              |
| Cost of Operation per MG                                   | \$28.92                      | \$18.74                                   | \$4.40                      | \$5.78                                               | \$14.56                                      |
| Estimated cost per capita<br>(based on 200,000 population) | \$0.47 per year              |                                           |                             |                                                      |                                              |

5,125 cu yd filter cake, estimated value \$20,500, delivered to City Parks during year for use as fertilizer

Additional Expenditures

|                    |          |
|--------------------|----------|
| Plant Improvements | \$3,199* |
| Painting           | 2,939*   |
| Office Engineering | 653      |
| New Equipment      | 1,587*   |
|                    | \$8,378  |

\* Estimated

The Sunset Pumping Plant was shut down during storms in order to minimize overflow from Sunset District storm sewers, and to avoid handling excessive quantities of sand in the sump.

## RICHMOND-SUNSET SEWAGE TREATMENT PLANT

TABLE 1 - SEWAGE TREATMENT DATA

| Month     | Flow, Million Gallons |        | Days By-Passed |             | Rain<br>Inches | *Susp. Solids, ppm |       |     | 5-Day BOD, ppm |     |     |
|-----------|-----------------------|--------|----------------|-------------|----------------|--------------------|-------|-----|----------------|-----|-----|
|           | Gravity               | Pumped | Rich-<br>mond  | Sun-<br>set |                | Raw                | Eff   | Rem | Raw            | Eff | Rem |
| July 1945 | 124.7                 | 159.7  |                | 14.00       |                | 260                | 61    | 77  | 225            | 115 | 51  |
| Aug       | 128.2                 | 189.4  |                |             |                | 265                | 58    | 78  | 265            | 130 | 51  |
| Sept      | 136.9                 | 167.2  |                |             | 0.12           | 270                | 62    | 77  | 230            | 125 | 46  |
| Oct       | 153.9                 | 157.5  |                | 2.51        | 2.36           | 270                | 58    | 79  | 225            | 100 | 56  |
| Nov       | 158.2                 | 93.0   |                | 13.80       | 3.06           | 190                | 47    | 75  | 200            | 110 | 45  |
| Dec       | 177.5                 | 79.9   |                | 16.88       | 7.79           | 205                | 50    | 76  | 185            | 110 | 40  |
| Jan       | 133.9                 | 3.8    | 1.19           | 30.38       | 1.63           | 185                | 54    | 71  | 190            | 120 | 37  |
| Feb       | 133.8                 | 131.5  |                | 6.11        | 2.42           | 180                | 60    | 67  | 185            | 145 | 22  |
| Mar       | 148.8                 | 134.4  |                | 6.98        | 2.98           | 200                | 65    | 78  | -              | -   | -   |
| Apr       | 132.3                 | 165.7  |                | .68         | 0.05           | 260                | 115** | 56  | 290            | 180 | 38  |
| May       | 148.4                 | 162.8  |                | 1.79        | 0.49           | 260                | 115** | 56  | 265            | 150 | 43  |
| June      | 146.6                 | 155.3  |                | 1.32        |                | 265                | 100** | 62  | 260            | 145 | 44  |
| Totals    | 1723.2                | 1500.2 | 1.19           | 94.45       | 20.90          | 240                | 73    | 70  | 230            | 130 | 44  |
| Wt Avg*** |                       |        |                |             |                |                    |       |     |                |     |     |

By-passing: Richmond - 1.19 days, shut down for plant overhaul and repairs  
 Sunset - 46.29 days, rain  
 48.16 days, shut down for plant overhaul and repairs

\* Suspended solids by modification of Chicago Sanitary District filter paper method.  
 Raw sewage sampled after mechanical bar racks.

\*\* Non-settleable inorganic fines present from construction of Lincoln Way storm water overflow in Mile Rock Sewer.

\*\*\* Weighted averages calculated from total flows by months.

## RICHMOND-SUNSET SEWAGE TREATMENT PLANT

TABLE 1 - SEWAGE TREATMENT DATA (Cont'd)

| Month     | Alkalinity as<br>CaCO <sub>3</sub> , ppm |     | Chlorides,<br>ppm |     | Sewage<br>Temp<br>°F |  | *<br>Screen-<br>ings,<br>Cu Ft | **<br>Grease,<br>Gallons<br>Pumped |  | Sand, Cu Yd |             | Chlorination<br>Lbs |         |
|-----------|------------------------------------------|-----|-------------------|-----|----------------------|--|--------------------------------|------------------------------------|--|-------------|-------------|---------------------|---------|
|           | Raw                                      | Eff | Raw               | Eff |                      |  |                                |                                    |  | Pre-Treat   | Sum-<br>set | Pre                 | Post    |
| July 1945 | 220                                      | 210 | 76                | 88  | 70                   |  | 310                            | 27,900                             |  | 18          | 19          | 7,790               | 23,380  |
| Aug       | 210                                      | 205 | 90                | 88  | 70                   |  | 330                            | 22,700                             |  | 16          | 14          | 6,990               | 13,300  |
| Sept      | 220                                      | 210 | 70                | 74  | 71                   |  | 300                            | 27,000                             |  | 28          | 24          | 7,860               | 25,070  |
| Oct       | 225                                      | 215 | 63                | 65  | 70                   |  | 315                            | 26,600                             |  | 56          | 32          | 7,800               | 23,420  |
| Nov       | 185                                      | 180 | 65                | 69  | 66                   |  | 312                            | 20,600                             |  | 61          | 55          | 6,880               | 13,880  |
| Dec       | 165                                      | 160 | 67                | 82  | 61                   |  | 357                            | 20,700                             |  | 59          | 41          | 6,790               | 9,980   |
| Jan       | 180                                      | 175 | 79                | 91  | 61                   |  | 345                            | 15,900                             |  | 67          | 4           | 3,770               | -0-     |
| Feb       | 180                                      | 175 | 78                | 82  | 61                   |  | 348                            | 22,600                             |  | 61          | 44          | 7,900               | -0-     |
| Mar       | 200                                      | 195 | 74                | 77  | 62                   |  | 357                            | 26,200                             |  | 78          | 28          | 8,220               | 1,170   |
| Apr       | 230                                      | 225 | 86                | 88  | 63                   |  | 420                            | 26,800                             |  | 52          | 20          | 8,900               | 25,470  |
| May       | 225                                      | 220 | 81                | 83  | 65                   |  | 387                            | 27,900                             |  | 43          | 21          | 9,230               | 25,380  |
| June      | 220                                      | 215 | 76                | 80  | 67                   |  | 348                            | 26,800                             |  | 39          | 19          | 9,200               | 24,650  |
| Totals    | 210                                      | 200 | 75                | 80  | 66                   |  | 4,129                          | 291,700                            |  | 578         | 321         | 91,330              | 185,700 |
| Wt Avg*** |                                          |     |                   |     |                      |  |                                |                                    |  |             |             |                     |         |

\* Removed by Pre-Treatment bar racks only; screenings from Sunset sump not included.

\*\* Approximate removals from grit-grease tanks; additional removals in Mixing and Sedimentation Building not included.

\*\*\* Weighted averages calculated from total flows by months.

Pre-Chlorination - 30 lbs per million gallons

Post-Chlorination - 9 AM - 6 PM, 100 lbs per million gallons

6 PM - 9 AM, 80 "

No post-chlorination when Sunset flow by-passed.

RICHMOND-SUNSET SEWAGE TREATMENT PLANT  
TABLE 2 - SLUDGE TO DIOESTER AND GAS PRODUCTION

| Month     | Fiscal Year 1945-1946  |                |                |            |              |                                 |            |            |                  |  |
|-----------|------------------------|----------------|----------------|------------|--------------|---------------------------------|------------|------------|------------------|--|
|           | Raw Sludge to Digester |                |                |            |              | Metered Gas Production - Cu Fts |            |            |                  |  |
|           | Gallons                | % Total Solids | Lbs Dry Solids | % Volatile | Lbs Volatile | To Boilers                      | To Waste   | Total      | Digester Temp op |  |
| July 1945 | 1,683,200              | 4.17           | 589,100        | 83.1       | 489,700      | 1,640,800                       | 2,806,600  | 4,447,400  | 86               |  |
| Aug       | 1,412,400              | 4.08           | 483,700        | 82.6       | 399,200      | 1,642,500                       | 2,048,600  | 3,691,100  | 87               |  |
| Sept      | 1,857,300              | 4.18           | 652,600        | 83.3       | 543,000      | 1,614,300                       | 3,142,200  | 4,756,500  | 86               |  |
| Oct       | 1,788,800              | 4.44           | 666,600        | 83.2       | 554,500      | 1,679,200                       | 3,166,800  | 4,846,000  | 86               |  |
| Nov       | 1,129,900              | 4.05           | 384,300        | 84.5       | 324,700      | 1,450,400                       | 1,686,900  | 3,137,300  | 85               |  |
| Dec       | 1,025,200              | 4.41           | 380,500        | 83.0       | 315,900      | 1,567,000                       | 1,504,900  | 3,071,900  | 83               |  |
| Jan 1946  | 1,521,500              | 4.48           | 200,200        | 84.1       | 168,300      | 1,484,100                       | 415,400    | 1,899,500  | 83               |  |
| Feb       | 1,166,900              | 4.29           | 420,600        | 86.1       | 362,400      | 1,536,400                       | 1,880,200  | 3,416,600  | 81               |  |
| Mar       | 1,373,600              | 4.32           | 498,000        | 86.3       | 429,700      | 1,686,400                       | 2,686,600  | 4,373,000  | 80               |  |
| Apr       | 1,551,100              | 4.50           | 597,600        | 84.6       | 505,600      | 1,703,500                       | 2,681,500  | 4,385,000  | 82               |  |
| May       | 1,708,400              | 4.69           | 672,100        | 83.0       | 558,100      | 1,731,900                       | 3,043,200  | 4,775,100  | 81               |  |
| June      | 1,663,800              | 4.55           | 635,300        | 83.9       | 533,100      | 1,628,600                       | 2,781,800  | 4,410,400  | 82               |  |
| Totals    | 16,921,100             |                | 6,180,600      |            | 5,184,200    | 19,345,100                      | 27,844,700 | 47,189,800 |                  |  |
| Wt Avg**  |                        | 4.35           |                | 83.9       |              |                                 |            |            | 83               |  |

\* Does not include gas leakage at digester seals.

\*\* Based on accumulated totals for year. All raw sludge computed at 8.40 pounds per gallon.

RICHMOND-SUNSET SEWAGE TREATMENT PLANT  
TABLE 3 - DIGESTED SLUDGE TO ELUTRIATION

| Month     | Sludge, Thousands of Gallons |         |      | % Solids      |         |      | Dry Solids, Thousands of Lbs |         |        |
|-----------|------------------------------|---------|------|---------------|---------|------|------------------------------|---------|--------|
|           | From Digester                | Elut To | Net  | From Digester | Elut To | Net  | From Digester                | Elut To | Net    |
|           | Supnt                        | Bottom  | Dig  | Supnt         | Bottom  | Dig  | Supnt                        | Bottom  | Dig    |
| July 1945 | 1792.7                       | 148.3   | 17.4 | 1.56          | 3.04    | 2.94 | 232.0                        | 37.9    | 4.3    |
| Aug       | 1201.4                       | 461.9   |      | 1.52          | 2.84    |      | 151.8                        | 110.0   |        |
| Sept      | 2153.7                       | 24.9    |      | 1.82          | 2.87    |      | 325.3                        | 6.0     |        |
| Oct       | 2008.5                       | 31.9    |      | 1.85          | 2.82    |      | 309.1                        | 7.5     |        |
| Nov       | 1195.6                       | 132.6   |      | 1.18          | 3.32    |      | 116.9                        | 36.8    |        |
| Dec       | 1038.2                       | 151.0   |      | 1.17          | 2.90    |      | 101.2                        | 36.8    |        |
| Jan       | 718.0                        | 33.7    |      | 1.04          | 3.64    |      | 62.1                         | 10.3    |        |
| Feb       | 1299.6                       | 53.1    |      | 1.31          | 3.79    |      | 141.4                        | 16.9    |        |
| Mar       | 1424.4                       |         |      | 1.55          |         |      | 183.8                        |         |        |
| Apr       | 1692.9                       | 41.1    |      | 1.57          | 2.44    |      | 217.7                        | 8.4     |        |
| May       | 1975.2                       |         |      | 1.91          |         |      | 313.0                        |         |        |
| June      | 1747.2                       | 133.7   |      | 1.77          | 2.44    |      | 257.7                        | 27.3    |        |
| Totals    | 18247.4                      | 1212.2  | 17.4 | 1.59          | 2.93    | 2.94 | 2412.0                       | 298.0   | 4.3    |
| Wt Avg*   |                              |         |      |               |         |      |                              |         | 2705.7 |

\* Based on accumulated totals for year. All supernatant sludge from digester computed at 8.31 pounds per gallon, and all bottom sludge at 8.40 pounds per gallon.

## RICHMOND-SUNSET SEWAGE TREATMENT PLANT

TABLE 3 - DIGESTED SLUDGE TO ELUTRIATION (Cont'd)

| Month     | % Volatile             |                |      | Volatile, Thousands of Lbs |                |        | Avg Alk<br>As CaCO <sub>3</sub> ,<br>ppm | Solids<br>To Flut<br>To Dig |
|-----------|------------------------|----------------|------|----------------------------|----------------|--------|------------------------------------------|-----------------------------|
|           | From Digester<br>Supnt | Elut To<br>Dig | Net  | From Digester<br>Supnt     | Elut To<br>Dig | Net    |                                          |                             |
| July 1945 | 65.8                   | 67.5           | 65.8 | 152.6                      | 24.9           | 174.6  | 2320                                     | .45                         |
| Aug       | 65.3                   | 62.5           | 64.1 | 99.1                       | 68.8           | 167.9  | 2380                                     | .54                         |
| Sept      | 66.9                   | 65.0           | 66.9 | 217.7                      | 3.9            | 221.6  | 2320                                     | .51                         |
| Oct       | 67.9                   | 66.8           | 67.9 | 209.7                      | 5.1            | 214.8  | 2420                                     | .47                         |
| Nov       | 66.1                   | 66.8           | 66.2 | 77.2                       | 24.6           | 101.8  | 2300                                     | .40                         |
| Dec       | 65.5                   | 65.6           | 65.5 | 66.2                       | 24.1           | 90.3   | 2060                                     | .36                         |
| Jan 1946  | 66.4                   | 65.1           | 66.2 | 41.2                       | 6.7            | 47.9   | 2000                                     | .36                         |
| Feb       | 67.7                   | 60.8           | 67.0 | 95.7                       | 10.3           | 106.0  | 1860                                     | .38                         |
| Mar       | 69.1                   |                | 69.1 | 127.0                      |                | 127.0  | 2040                                     | .42                         |
| Apr       | 69.0                   | 67.8           | 68.9 | 150.1                      | 5.7            | 155.8  | 2140                                     | .38                         |
| May       | 67.4                   |                | 67.4 | 210.9                      |                | 210.9  | 2210                                     | .47                         |
| June      | 67.8                   | 68.6           | 67.9 | 174.8                      | 18.8           | 193.6  | 2200                                     | .45                         |
| Totals    | 67.3                   | 64.7           | 67.0 | 1622.2                     | 192.9          | 1812.2 | 2220                                     | .44                         |
| Wt Avg*   |                        |                |      |                            | 2.9            |        |                                          |                             |

\* Based on accumulated totals for year.

## RICHMOND-SUN SET SEWAGE TREATMENT PLANT

TABLE 4 - VACUUM FILTER OPERATION

| Month     | M<br>Gallons | Elutriated Sludge Filtered |                 |                |                    | Volatiles    |      | Alk as<br>CaCO <sub>3</sub> , ppm |
|-----------|--------------|----------------------------|-----------------|----------------|--------------------|--------------|------|-----------------------------------|
|           |              | %<br>Solids                | Solids<br>M Lbs | %<br>Volatiles | Volatiles<br>M Lbs | Ash<br>M Lbs | Ash  |                                   |
| July 1945 | 729.0        | 3.07                       | 188.4           | 67.0           | 126.2              | 62.2         | 2.03 | 455                               |
| Aug       | 713.3        | 3.10                       | 186.0           | 65.0           | 120.9              | 65.1         | 1.86 | 405                               |
| Sept      | 651.5        | 2.96                       | 162.0           | 68.2           | 110.5              | 51.5         | 2.14 | 415                               |
| Oct       | 754.1        | 2.86                       | 181.7           | 69.3           | 125.8              | 55.9         | 2.26 | 425                               |
| Nov       | 524.2        | 3.10                       | 137.4           | 68.4           | 94.0               | 43.4         | 2.16 | 380                               |
| Dec       | 449.7        | 3.39                       | 128.9           | 67.4           | 86.8               | 42.1         | 2.06 | 370                               |
| Jan       | 156.2        | 3.07                       | 40.5            | 66.2           | 26.8               | 13.7         | 1.96 | 395                               |
| Feb       | 541.9        | 2.91                       | 133.2           | 67.6           | 90.1               | 43.1         | 2.09 | 345                               |
| Mar       | 661.5        | 2.77                       | 154.7           | 70.3           | 108.7              | 46.0         | 2.36 | 385                               |
| Apr       | 609.1        | 3.59                       | 185.0           | 70.5           | 130.5              | 54.5         | 2.39 | 380                               |
| May       | 732.1        | 3.40                       | 210.1           | 68.9           | 144.7              | 65.4         | 2.21 | 395                               |
| June      | 654.4        | 2.84                       | 157.0           | 69.4           | 109.0              | 48.0         | 2.27 | 400                               |
| Totals    | 7177.0       |                            | 1864.9          |                | 1274.0             | 590.9        |      |                                   |
| Wt Avg*   |              | 3.08                       |                 | 68.3           |                    |              | 2.16 | 400                               |

\* Based on accumulated totals for year.

## RICHMOND-SUNSET SEWAGE TREATMENT PLANT

TABLE 4 - VACUUM FILTER OPERATION (Cont'd)

| Month     | Lbs<br>FeCl <sub>3</sub> | % FeCl <sub>3</sub><br>Solids | Hours<br>Filter<br>Operated | Lbs Solids |                     | Filter<br>Cake<br>% Water | Filter<br>Cake<br>M Lbs | Gallons<br>Sludge<br>Filtered |        | Fil-<br>trate<br>M Lbs<br>Per Hr | Filter<br>Cake<br>Cu Yds |
|-----------|--------------------------|-------------------------------|-----------------------------|------------|---------------------|---------------------------|-------------------------|-------------------------------|--------|----------------------------------|--------------------------|
|           |                          |                               |                             | Per Hr     | Per Sq Ft<br>Filter |                           |                         | Per Hr                        | Per Hr |                                  |                          |
| July 1945 | 10030                    | 5.32                          | 205.68                      | 950        | 4.75                | 75.2                      | 785.6                   | 3540                          | 26.0   | 54.9                             |                          |
| Aug       | 10490                    | 5.64                          | 195.61                      | 990        | 4.95                | 74.8                      | 764.0                   | 3640                          | 26.8   | 51.6                             |                          |
| Sept      | 9300                     | 5.74                          | 185.83                      | 900        | 4.50                | 74.2                      | 649.5                   | 3500                          | 25.9   | 48.9                             |                          |
| Oct       | 9000                     | 4.95                          | 218.87                      | 860        | 4.30                | 74.6                      | 737.0                   | 3480                          | 25.9   | 52.9                             |                          |
| Nov       | 6810                     | 4.95                          | 148.15                      | 960        | 4.80                | 75.0                      | 568.1                   | 3540                          | 26.1   | 40.9                             |                          |
| Dec       | 5320                     | 4.12                          | 126.50                      | 1050       | 5.25                | 74.4                      | 517.0                   | 3550                          | 25.9   | 34.8                             |                          |
| Jan       | 1850                     | 4.57                          | 42.77                       | 950        | 4.75                | 74.9                      | 166.3                   | 3570                          | 26.3   | 12.7                             |                          |
| Feb       | 5630                     | 4.23                          | 152.39                      | 900        | 4.50                | 75.4                      | 556.9                   | 3560                          | 26.3   | 38.2                             |                          |
| Mar       | 5200                     | 3.36                          | 191.32                      | 830        | 4.15                | 76.6                      | 674.5                   | 3460                          | 25.7   | 45.6                             |                          |
| Apr       | 5760                     | 3.12                          | 188.32                      | 1000       | 5.00                | 76.7                      | 810.8                   | 3230                          | 23.1   | 51.6                             |                          |
| May       | 6370                     | 3.02                          | 210.45                      | 1020       | 5.10                | 77.3                      | 943.8                   | 3480                          | 24.9   | 63.0                             |                          |
| June      | 5750                     | 3.68                          | 189.98                      | 840        | 4.20                | 76.4                      | 679.7                   | 3440                          | 25.6   | 46.9                             |                          |
| Totals    | 81510                    |                               | 2054.87                     | 930        | 4.65                | 75.6                      | 7853.2                  | 3490                          | 25.7   |                                  | 5420*                    |
| Wt Avg**  |                          | 4.37                          |                             |            |                     |                           |                         |                               |        |                                  |                          |

\* 5125 cu yd to City Parks  
295 " " Public

\*\* Based on accumulated totals for year.



CENTRAL PERMIT BUREAU

S. J. Rosenblum, Head Clerk

FUNCTIONS

The Central Permit Bureau was established in the Department of Public Works by Ordinance 9132 New Series (Part II, Chapter X, Article 1 of the Municipal Code) and became effective January 8, 1932, concurrently with the new City Charter.

The purpose of establishing this bureau was to centralize functions which had previously been scattered among various offices and so expedite service to the public in the matter of filing applications and issuing permits. This bureau is authorized to accept applications, expedite their approval or disapproval, issue permits, and collect the proper legal fees. It is also the duty of this bureau, upon receipt of Certificates of Final Inspection from the various interested departments to issue Certificates of Occupancy for all buildings except new one and two-story family frame dwellings which are exempted from requiring this Certificate by Ordinance 2814 (Series of 1939) approved July 25, 1944, which amended the original ordinance with respect to this requirement.

The supervisory head of the bureau also acts as cashier for the Department of Public Works. All moneys due the department for permits issued, payment of accounts receivable, or for any other functions performed, are collected by him. The collections are deposited daily with the Treasurer of the City and County, pursuant to the provisions of Section 82 of the Charter.

PERSONNEL

The personnel of the Bureau as of June 30, 1946, was as follows:

- 1 Head clerk
- 2 Senior clerks
- 1 General clerk
- 4 General clerk-typists

WORK DONE

The volume of business of this bureau for the fiscal year 1945-1946 was the largest since its establishment. This was due primarily to the reconversion of the building industry from a war-time to a peacetime basis. The month of March, 1946, was the largest month during the fiscal year due to the effort of the building industry to beat the deadline of March 26th, the effective date of Civilian Production Administration Order VHP-1 which placed certain restrictions upon commercial and industrial construction.

The only phase of the work of this bureau which showed a falling off from the previous fiscal year was in the number of permits for house numbers which were issued and was due to the completing of the Housing Authority Projects. The number of permits issued on private construction, however, increased 64%. All other activities of the bureau showed increases over the preceding fiscal year ranging from an increase of 27% for inquiries as to age and class of building to 88% for the amount of receipts handled by the bureau. The total number of permits handled was up 41%. Applications for building permits totaled 8,455.

STATISTICAL DATA

The following statistical data reflect the activities of the Central Permit Bureau for the fiscal year 1945-1946.

| <u>Permits</u>                    | <u>Number issued</u> |
|-----------------------------------|----------------------|
| Buildings                         | 6,914                |
| Billboards                        | 532                  |
| Boiler Installations              | 200                  |
| Boiler Inspections                | 4                    |
| House Moving                      | 22                   |
| Demolitions                       | 61                   |
| Flue Registrations                | 31                   |
| Flue Permits - New buildings      | 15                   |
| Flue Permits - Old buildings      | 49                   |
| Flue Coupon Books - New buildings | 81                   |
| Flue Coupon Books - Old buildings | 15                   |
| Construct Sidewalks               | 48                   |
| Street Space                      | 1,344                |
| Excavations                       | 739                  |
| Side Severs                       | 916                  |
| Excess Costs - Side Severs        | 115                  |

Permits - (Continued)

|                                       | <u>Number issued</u> |
|---------------------------------------|----------------------|
| Sidewalk Flower Markets               | 40                   |
| Blasting                              | 1                    |
| Advertising                           | 10                   |
| House Number Certificates             | 1,297                |
| Payments for Surveys                  | 48                   |
| Payments for Engineering Inspection   | 65                   |
| Payments for Street Improvement Bonds | 77                   |
| Public Utilities Street Openings      | <u>5,203</u>         |
| Total number of Permits Issued        | 17,827               |

Refunds made from special and trust funds

|                                                         | <u>Number of<br/>Refunds</u> | <u>Amount<br/>Refunded</u> |
|---------------------------------------------------------|------------------------------|----------------------------|
| Special Permit Fund<br>(Street space and sub-sidewalks) | 687                          | \$ 23,930.00               |
| House-Moving Fund                                       | 22                           | 2,200.00                   |
| Excavations                                             | 30                           | 414.70                     |
| Side Sewers                                             |                              |                            |
| Refunds to Depositors                                   | 725                          | 40,492.94                  |
| Installation Costs credited<br>to General Fund          |                              | 84,305.87                  |
| Deposits on Plans                                       | 791                          | 15,420.00                  |
| Street Improvement Bonds                                | <u>5</u>                     | <u>1,744.80</u>            |
|                                                         | 2,260                        | \$168,508.31               |

Report of house numbering activities

|                                                                                    |              |       |
|------------------------------------------------------------------------------------|--------------|-------|
| House numbers issued:                                                              |              |       |
| Private construction                                                               | 2,854        |       |
| San Francisco Housing Authority projects                                           | <u>2,500</u> | 5,354 |
| Investigations made and complaints adjusted                                        |              | 850   |
| Changes in house numbering ordered                                                 |              | 125   |
| Inquiries from banks, title insurance companies,<br>general public, etc., answered |              | 2,700 |

Additional non-revenue activities

|                                                                                                                                 |       |
|---------------------------------------------------------------------------------------------------------------------------------|-------|
| Inquiries pertaining to age and class of<br>buildings, and other information requiring<br>reference to old applications on file | 9,241 |
| Plans brought from the basement by request<br>for reference purposes and photostating                                           | 815   |

Cashier's ReportSource of Receipt

|                              |                  |              |
|------------------------------|------------------|--------------|
| Street space permit deposits | \$ 47,470.00     |              |
| Sub-sidewalk " "             | 795.00           |              |
| House-moving " "             | 2,200.00         |              |
| Side sewer " "               | 144,073.81       |              |
| Deposits on plans            | <u>16,560.00</u> |              |
|                              |                  | \$211,098.81 |

Excavation Permits

|                                        |                 |           |
|----------------------------------------|-----------------|-----------|
| Special deposits                       | \$ 744.60       |           |
| Insp. fees for Excav. (Spec. deposits) | 67.50           |           |
| " " (Public utility corporations)      | 9,211.50        |           |
| " " (Lowering curbs, etc.)             | <u>3,973.50</u> | 13,997.10 |

## Fees for:

|                           |               |            |
|---------------------------|---------------|------------|
| Building permits          | \$142,331.35  |            |
| Billboard permits         | 1,064.00      |            |
| Boiler installations      | 788.50        |            |
| Boiler inspections        | 52.00         |            |
| Use of street space       | 24,881.90     |            |
| House number certificates | 6,934.00      |            |
| House moving permits      | 44.00         |            |
| Flue registrations        | 620.00        |            |
| Flues - New buildings     | 7.50          |            |
| " Old buildings           | 98.00         |            |
| " New buildings (coupons) | 1,012.50      |            |
| " Old buildings (coupons) | <u>300.00</u> | 178,133.75 |

Sidewalk flower markets - fees 1,428.00

Side sewers - excess costs 1,631.79

Advertising charges 704.38

Payments on Street Improvement Bonds 1,635.60

Payments on Street Improvement Bonds (Ord. of 1934) 5,216.92

Surveys - fees 9,110.00

Inspections - fees 14,255.00

Miscellaneous 1,134,394.45

Total receipts \$1,571,605.80

Note: 61 Demolition permits }  
       48 Sidewalk permits } Issued - no fees charged

Deposits with City and County Treasurer  
Classified by Funds

General Fund

|                                               |                  |                       |
|-----------------------------------------------|------------------|-----------------------|
| Street space and sub-sidewalks                |                  | \$ 48,265.00          |
| House-moving                                  |                  | 2,200.00              |
| Side sewers                                   |                  | 144,073.81            |
| Plans                                         |                  | 16,560.00             |
| Surveys                                       | \$ 9,110.00      |                       |
| Inspections                                   | <u>14,255.00</u> | 23,365.00             |
| Excavations                                   |                  |                       |
| Deposits                                      | \$ 744.60        |                       |
| Fees                                          | <u>13,252.50</u> | 13,997.10             |
| Advertising                                   |                  | 704.38                |
| Side sewers - excess costs                    |                  | 1,631.79              |
| Fees -                                        |                  |                       |
| Building permits                              | \$142,331.35     |                       |
| Billboards                                    | 1,064.00         |                       |
| Street space                                  | 24,881.90        |                       |
| House numbers                                 | 6,934.00         |                       |
| House-moving                                  | 44.00            |                       |
| Boiler installations                          | 788.50           |                       |
| Boiler inspections                            | 52.00            |                       |
| Flue registrations                            | 620.00           |                       |
| Flues - new buildings                         | 7.50             |                       |
| " old buildings                               | 98.00            |                       |
| " new buildings (coupons)                     | 1,012.50         |                       |
| " old buildings (coupons)                     | <u>300.00</u>    | 178,133.75            |
| Sidewalk Flower Markets - fees                |                  | 1,428.00              |
| Street Improvement Fund                       |                  | 1,635.60              |
| Street Improvement Fund (Ord. of 1934)        |                  | 5,216.92              |
| <u>Miscellaneous Funds</u>                    |                  |                       |
| State Highway Trust                           | \$560,529.38     |                       |
| Special Road Improvement                      | 10,072.81        |                       |
| General                                       | 921.36           |                       |
| Special Gas Tax Street Improvement            | 562,181.44       |                       |
| Unappropriated 1944 Sewer Bond Fund           | <u>689.46</u>    | 1,134,394.45          |
| Total deposits with City and County Treasurer |                  | <u>\$1,571,605.80</u> |

## Central Permit Bureau

Classification of Building Permits Issued

| <u>Class</u>     | <u>No. of<br/>Permits</u> | <u>Estimated<br/>Cost</u> | <u>Fees</u>  |
|------------------|---------------------------|---------------------------|--------------|
| A                | 13                        | \$ 3,837,864              |              |
| B                | 20                        | 2,128,880                 |              |
| C                | 105                       | 3,807,464                 |              |
| Flames           | 2,508                     | 16,075,287                |              |
| Alterations      | 4,268                     | 9,866,240                 |              |
| Public           | -                         | -                         |              |
| U. S. Government | -                         | -                         |              |
| Totals           | 6,914                     | \$35,715,735              | \$142,331.35 |
| Billboards       | 53                        | 26,080                    | 1,064.00     |
| Totals           | 7,446                     | \$35,741,815              | \$143,395.35 |

Blue Registrations and Permits

|                            |     |             |
|----------------------------|-----|-------------|
| Blue Registrations         | 41  | 620.00      |
| *Coupon books - new bldgs. | 81  | 1,012.50    |
| ** " " old "               | 15  | 300.00      |
| Blue permits new "         | 15  | 7.50        |
| " " old "                  | 49  | 98.00       |
| Totals                     | 191 | \$ 2,038.00 |

Miscellaneous Permits

|                            |     |        |
|----------------------------|-----|--------|
| To raze structures         | 61  | -      |
| To move buildings          | 22  | 44.00  |
| Boiler installations       | 200 | 788.50 |
| Boiler inspection requests | 4   | 52.00  |
| Totals                     | 287 | 884.50 |

GRAND TOTALS      7,924      \$146,317.85

\*New coupon books contain  
25 prepaid coupons

\*\*Old coupon books contain  
10 prepaid coupons

BUREAU OF BUILDING INSPECTION  
John G. Little, Superintendent

FUNCTIONS

The Bureau examines and reports on all plans and applications for building permits submitted to the Department of Public Works, inspects the building work as it progresses, makes a final inspection, and issues Certificates of Final Completion when the work is finished. It reports on legislation affecting building matters and proposes legislation as required.

PERSONNEL

The personnel includes the following classifications:

- 1 Superintendent
- 14 Building inspectors
- 1 Boiler inspector
- 2 Structural engineers
- 2 Clerk-stenographers

ORGANIZATION

Superintendent - In addition to performing the duties of his office, attends the meetings of the Pacific Coast Building Officials Conference and of other organizations dealing with matters of building construction, building codes, and building safety, and takes an active part in their deliberations.

Building Inspectors - One inspector, acting as assistant superintendent, coordinates and directs the office and field work of the various structural engineers, inspectors and clerical force.

One inspector, as special assistant to the assistant superintendent, is in charge of public relations, handles requests of a general nature, follows up complaints not adjusted by the district inspectors, and reports on applications for operations of night clubs, places of public assembly, etc. One inspector is in charge of general plan checking; he contacts the applicants for building permits and others requesting specific information, prepares the assignments for the district building inspectors, follows up their

## Bureau of Building Inspection

activities and keeps records of the personnel of the Bureau. Eleven inspectors are assigned to definite districts and are charged with the responsibility for all inspection work in their respective districts. They report upon applications for alterations and additions to buildings in their districts previous to examination by other divisions of the bureau, prepare and post Certificate of Final Completion, check and follow up complaints, interview property owners attend meetings of the Board of Permit Appeals and appear before courts in matters of condemnation and prosecution.

Boiler Inspector - Makes all investigations and reports pertaining to the construction of steam boilers and air-pressure tanks.

Structural Engineers - Check and report on all plans pertaining to structural engineering, make field inspections on all matters requiring engineering inspections, follow up matters concerning structural safety brought to their attention by the district building inspectors, assist other bureaus and departments in structural matters, suggest revisions to the building law and are editing a new building code.

Clerical Force - Takes care of all correspondence and files of the bureau, and keeps records of all matters pertaining to the issuance of Certificates of Completion.

BUILDING CONSTRUCTION

Building construction during the past fiscal year was mainly of a residential character. Industrial and government work connected with the war emergency had diminished toward the end of the previous fiscal year in anticipation of the end of the war.

Restrictions affecting commercial construction during the war years had created an impressive backlog in this class of construction and due to reconversion there arose demand for new industrial construction. At the same time with the return of the veterans the already existent shortage of proper housing became increasingly felt.



Considering the problem of housing of primary importance, the Government charged the Civilian Production Administration (CPA) with issuance of priority ratings to building construction.

In the hope of getting preference by securing a building permit, a record number of applications for building permits was filed in the month of March, 1946, but due to lack of essential building materials, priority ratings were refused for a large amount of the contemplated work.

V-J day marks also the return of private construction, and a great deal of small alteration work was started. New construction not seen in San Francisco for some years was commenced, such as the fifteen-story addition to the Matson Building, the complete remodeling of the Butler Building to be occupied by I. Magnin & Company as a high-class apparel shop for women (which building is being stripped to the steel frame before reconstruction), and "Apparel City," -- a group of buildings to be devoted to the manufacture of wearing apparel, and located at Oakdale Avenue and Industrial Street.

There also have been constructed in the past fiscal year, a few "Quonset" huts for industrial purposes and some all-steel buildings of standard design for general purposes.

#### WORK DONE

The extent of routine operations of the Bureau of Building Inspection is set forth in the following tabulation of building permits taken from the records of the Central Permit Bureau.



Apparel Center  
Site of proposed \$5,000,000 project covering 32 acres



Residential buildings under construction  
Parkside District



Butler Building, Geary and Stockton Streets  
Being remodeled as a high-class apparel shop for women



One-family residence  
Vicinity of Noriega Street and Sixteenth Avenue

## Bureau of Building Inspection

| <u>Class</u>       | <u>Number<br/>of Permits</u> | <u>Cost</u>  |
|--------------------|------------------------------|--------------|
| A                  | 13                           | \$ 3,837,864 |
| B                  | 20                           | 2,128,880    |
| C                  | 105                          | 3,807,464    |
| Frame Construction | 2,508                        | 16,075,287   |
| Alterations        | 4,268                        | 9,866,240    |
| Totals             | 6,914                        | \$35,715,735 |

The following statistics of monthly reports indicate the volume of work done during the year:

|                                                                                                                                 |        |
|---------------------------------------------------------------------------------------------------------------------------------|--------|
| Number of inspections reported by inspectors of buildings                                                                       | 39,687 |
| Number of projects remaining on which permits have been issued that have not been reported completed by inspectors of buildings | 3,905  |
| Number of complaints that have been reported adjusted by inspectors of buildings                                                | 836    |
| Number of inspections reported by inspectors of boilers                                                                         | 1,292  |
| Number of projects remaining on which permits have been issued that have not been reported completed by inspectors of boilers   | 9      |
| Number of complaints and requests for information recorded                                                                      | 134    |
| Number of complaints and requests on which initial inspections have been reported                                               | 121    |
| Number of applications for permits examined by and approved by structural engineers                                             | 4,717  |
| Number of applications for permits pending                                                                                      | 50     |

BUILDING CODE

One of the most important tasks performed by the Bureau in the past fiscal year was in connection with the preparation of the proposed new building code. One structural engineer devoted full time to this work and made a thorough study of practically all the important building codes in the United States, as well as the National Building Code of Canada. The preliminary draft was completed March 1, 1946, and copies were submitted to all the interested organizations for study and suggestions. The response from these organizations was highly constructive and was utilized in the preparation of a revised draft, which work absorbed the balance of the fiscal year.

BUREAU OF ARCHITECTURE

Dodge A. Riedy, City Architect

FUNCTIONS

The Bureau of Architecture prepares plans, specifications, and estimates for new construction, also alterations and repairs to public buildings on contracts in excess of \$1000. All architectural work for the Board of Education, Department of Health, Fire Department, Police Department, Sheriff, Public Welfare Department, Juvenile Court, Department of Electricity, and for all other property under the jurisdiction of the Department of Public Works, such as Repair Shops, Yards, City Hall, Hall of Justice, Civic Auditorium, California Palace of the Legion of Honor, and M.H.de Young Memorial Museum is handled by this bureau.

On major projects which the Bureau is not equipped to handle, architects are appointed for individual contracts and their work is under the direction and supervision of the City Architect.

PERSONNEL

The personnel of the bureau as of June 30, 1946, was:

- 1 City architect
- 1 Architect
- 3 Architectural draftsmen
- 2 Clerk-stenographers
- 10 Building inspectors

WORK DONE

During the past year, as it was for the duration of the war, the work consisted mostly of alterations, repairs, and maintenance. Several portable frame classrooms were moved and re-installed at various schools. Four frame office buildings were constructed at Candlestick Cove and Ridgepoint school sites Nos. 1, 2, and 3. The following tabulations list the various contract jobs which were undertaken during the fiscal year.

## Bureau of Architecture

## Board of Education - School Buildings

|                                   |              |
|-----------------------------------|--------------|
| Galileo high                      |              |
| Kitchen - alterations             | \$ 47,105.14 |
| additional equipment              | 2,268.50     |
| John Muir                         |              |
| Kitchen - additions               | 8,920.23     |
| Spring Valley                     |              |
| Alterations                       | 13,545.25    |
| Ulloa                             |              |
| Relocating original buildings     | 24,460.83    |
| Adams                             |              |
| Civic Auditorium                  |              |
| Office - alterations              | 90,206.07    |
| Moving, Underpinning              |              |
| and Reconditioning                |              |
| Bret Harte                        |              |
| 1 portable frame classroom        | 2,004.00     |
| Miraloma                          |              |
| 1 portable frame classroom        | 2,619.00     |
| Candlestick Cove                  |              |
| Office building and additional    |              |
| classroom building - Site #4      | 14,920.23    |
| Ridgepoint - Sites #1, #2, and #3 |              |
| Office buildings                  | 30,150.00    |
| <u>Repairs</u>                    |              |
| Cleveland                         | 19,522.49    |
| Farragut                          | 31,257.07    |
| Irving M. Scott                   | 20,094.60    |
| Sheridan                          | 25,592.76    |
| <u>Roof repairs</u>               |              |
| Bryant                            | 1,444.00     |
| Emerson                           | 2,775.00     |
| Jean Parker                       | 6,438.00     |
| Kate Kennedy                      | 3,231.00     |
| Twin Peaks                        | 1,493.00     |
| Replacement and repairs of        |              |
| blackboards, bulletin boards      |              |
| and pinning spaces                |              |
| Alvarado                          | 8,596.20     |
| Pacific Heights                   | 9,484.34     |
| Portola Jr. High                  | 6,422.80     |
| Sanchez                           | 8,043.56     |

Painting work - School buildings

|                              |              |
|------------------------------|--------------|
| <u>Slate</u>                 |              |
| Sheridan                     | \$ 673.00    |
| <u>Interior</u>              |              |
| Commerce high cafeteria      | 3,902.00     |
| Bryant                       | 9,775.00     |
| <u>Exterior</u>              |              |
| Burnett                      | 5,687.00     |
| Twin Peaks                   | 2,893.00     |
| Garfield                     | 6,129.00     |
| Jean Parker                  | 2,447.00     |
| Yerba Buena - and annex      | 2,877.00     |
| <u>Interior and Exterior</u> |              |
| George Peabody               | 15,622.13    |
| Francisco Jr. high           | 18,636.59    |
| Francisco Jr. high annex     | 8,121.00     |
| Commodore Stockton           | 15,849.50    |
| Commodore Stockton annex     | 6,818.00     |
| Total                        | \$480,024.29 |

Department of HealthSan Francisco Hospital

|                                                    |             |
|----------------------------------------------------|-------------|
| Alterations to laundry                             | \$ 6,250.81 |
| Electrical work for alterations and additions      | 7,058.00    |
| Interior painting of ward buildings Nos.1,2,3, & 4 | 31,632.64   |

Asphalt tile flooring

|                     |          |
|---------------------|----------|
| Ward building No. 1 | 4,429.00 |
| Ward building No. 2 | 5,680.00 |
| Ward building No. 3 | 5,571.00 |
| Ward building No. 4 | 3,579.50 |

Laguna Honda Home

|                                                          |             |
|----------------------------------------------------------|-------------|
| New toilet room - Clinic patients                        |             |
| Second floor - Ward A                                    | 3,645.00    |
| New toilet room in Men's day room                        |             |
| Main building                                            | 4,624.00    |
| Exterior painting of main building and ward building "A" | 8,366.00    |
| Total                                                    | \$80,835.95 |

Police Department

|                                     |             |
|-------------------------------------|-------------|
| Repairs to Southern Police Station  | \$16,826.45 |
| Repairs to Golden Gate Park Stables | 5,331.89    |
| Total                               | \$22,158.34 |

Hall of Justice

|                                          |                 |
|------------------------------------------|-----------------|
| Hall of Justice - repairs                | \$ 24,169.00    |
| Superior Court Rooms - lighting fixtures | <u>4,388.60</u> |
| Total                                    | \$ 28,557.60    |

Sheriff

|                                                                                 |             |
|---------------------------------------------------------------------------------|-------------|
| San Francisco Women's Jail #4, San Mateo County<br>Waterproofing exterior walls | \$ 6,200.00 |
|---------------------------------------------------------------------------------|-------------|

Fire Department

|                                                          |          |
|----------------------------------------------------------|----------|
| S.F.F.D. Engine No. 26<br>Interior and exterior painting | 2,266.00 |
|----------------------------------------------------------|----------|

City HallController's Office

|                                                                           |                 |
|---------------------------------------------------------------------------|-----------------|
| Controller's Private Office - alterations                                 | 11,184.77       |
| Air conditioning system - overhauling                                     | 645.00          |
| Controller's Payroll Division - anemostats                                | 414.85          |
| Installation of acoustical tile                                           | 363.00          |
| Installation of acoustical tile                                           | 239.00          |
| Department of City Planning - Room 252<br>Installation of acoustical tile | 359.00          |
| Bureau of Building Inspection<br>Installation of acoustical tile          | 943.00          |
| City Attorney's Office - second floor<br>Alterations                      | 6,833.90        |
| Women's toilet room in basement of City Hall<br>Alterations               | <u>2,597.00</u> |
| Total                                                                     | \$ 23,579.52    |

Miscellaneous

|                                                                 |                 |
|-----------------------------------------------------------------|-----------------|
| Veteran's Building and Opera House<br>Partial interior painting | \$ 8,900.00     |
| Auto Shop No. 1<br>Repairs to the gate and fence                | 1,210.00        |
| Dismantling gas stations at various locations                   | <u>2,457.00</u> |
| Total                                                           | \$ 12,567.00    |

Grand total \$656,188.70



## BUREAU OF SEWER REPAIR

Emile F. Muheim, Superintendent

### FUNCTIONS

The Bureau of Sewer Repair is responsible for the maintenance and repair of main sewers, also the repair and cleaning of catchbasins and manholes. There are over 760 miles of main sewers ranging in size from 6" I.S.P. sewers to double compartment reinforced concrete sewers, each compartment being 8'-6" x 11'-0" in cross-section. The bureau installs and repairs side sewers between the main and the trap, the latter generally being placed two feet inside the curb line.

The Bureau cooperates with the Bureau of Engineering in developing major sewer improvements and extensions by reporting on deterioration of old sewers and faulty street drainage.

Routine operations consist of investigating complaints and entering the final disposition (such as cleaning and repairing a main sewer, repairing a side sewer failure or stoppage or installing a new side sewer) in the proper record. The bureau cleans the sumps of all sewage pumping stations.

Cleaning of pipe and trunk sewers is now done by mechanical equipment perfected by our own engineers. Cleaning of catchbasins, in general, is taken care of by eight eductors assigned to districts into which the City has been divided.

### PERSONNEL

The personnel of the Bureau as of June 30, 1946, was as follows:

- 1 Superintendent
- 2 Assistant superintendents
- 2 General foremen
- 1 Civil engineering inspector
- 1 Clerk-typist
- 7 Bricklayers
- 12 Hod carriers
- 50 Cribbers
- 28 Laborers
- 9 Chauffeurs
- 17 Sewer cleaners

ORGANIZATION

The regular field crews are employed eight hours per day, Monday through Friday, throughout the year and an emergency crew is on duty from 4:30 p.m. until 12:30 a.m. In the summer months there is a skeleton standby crew on Saturday mornings; during the winter months on Saturdays, Sundays, and holidays, a full crew is on duty from 4:00 p.m. until midnight.

On Saturdays, Sundays, and holidays, during the entire year a material truck is on duty as a maintenance truck, taking care of lanterns and the safety of current jobs. The driver of the truck is also on call after hours every day in the year. The supervisory force is divided so that one assistant superintendent or general foreman is on call Saturdays, Sundays, and holidays, and after regular working hours.



Locust St. - North of Jackson St.  
Broken sewer undermined pavement



Clementina St. between Third and Fourth Sts.  
Subgrade washed out due to broken sewer

Safety equipment consisting of belts, lines and gas masks is issued to all men required to go underground; and men engaged in breaking pavements are required to wear safety goggles. Whenever possible, only equipment approved by the U. S. Bureau of Mines is used.

#### Equipment

|               |                                                                                                                                                                                                                                                                                                                  |   |                                    |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|------------------------------------|
| Owned by City | 5-Passenger automobiles for administrative and supervisory personnel<br>8 Elgin eductors for cleaning catchbasins<br>1 Air compressor for breaking pavement<br>1 Power-driven sewer cleaning unit for use on pipe and main sewers<br>1 Gasoline-driven portable pump<br>1 Portable pump - attached to compressor | } | to pump man-holes or flood ditches |
|               | Windlasses<br>Cables, buckets, rods<br>Sewer lamps, lanterns, barricades<br>Hose                                                                                                                                                                                                                                 |   |                                    |



Alabama St., south of Army St.  
18" I.S.P. sewer collapsed washing out subgrade and  
destroying pavement

Equipment - (Continued)

Owned by City

Safety belts, safety lines, gas masks  
Safety goggles

Contractual basis

5 Dump trucks for handling material  
5 Panel delivery trucks for sewer maintenance  
equipment

WORK DONE

During the past fiscal year 7,957 complaints were investigated and adjusted, 460 main sewer breaks were repaired, and 1,021 side sewers were installed or repaired.

## SEWER REPAIR COSTS

| Repair to sewers                               | Labor       | Material   | Trucks      | Total        | Number<br>of Jobs |
|------------------------------------------------|-------------|------------|-------------|--------------|-------------------|
|                                                |             |            |             |              |                   |
| Brick sewers                                   | \$38,799.67 | \$4,615.73 | \$1,607.08  | \$45,022.48  | 143               |
| Pipe sewers                                    | 72,873.94   | 12,911.70  | 7,864.60    | 93,650.24    | 424               |
| Concrete sewers                                | 707.98      | 77.69      | 38.90       | 824.57       | 5                 |
| Building manholes & catchbasins                | 13,015.76   | 3,114.57   | 1,427.34    | 17,557.67    | 34 MH & 11 CB     |
| Repairs to catchbasins                         | 10,168.81   | 1,987.96   | 860.15      | 13,016.92    | 126               |
| Repairs to manholes                            | 5,169.02    | 1,407.80   | 398.23      | 6,975.05     | 86                |
| Cleaning sewers & catchbasins                  |             |            |             |              |                   |
| Hand cleaning catchbasins                      |             |            |             |              |                   |
| (286 cu.yds. silt removed)                     | 4,354.82    | 359.74     | 469.78      | 5,184.34     | 506               |
| Sewer cleaning                                 |             |            |             |              |                   |
| (1,705 cu.yds. silt removed)                   | 41,262.93   | 4,138.14   | 2,349.50    | 47,750.57    | 162               |
| Eductors                                       |             |            |             |              |                   |
| Catchbasin cleaning                            |             |            |             |              |                   |
| (7,857 cu.yds. silt removed)                   |             |            |             |              |                   |
| (5,255 catchbasins cleaned)                    | 26,350.70   | 2,166.27   |             | 28,516.97    |                   |
| Main sewers                                    | 7,838.08    | 617.76     |             | 8,455.84     |                   |
| Shop work                                      | 1,870.01    | 152.43     |             | 2,022.44     |                   |
| Sewer Flushing, Inspections<br>and Maintenance |             |            |             |              |                   |
| Flushing                                       | 5,230.16    | 380.71     | 2,775.88    | 8,386.75     |                   |
| Breaks                                         | 437.46      | 35.19      | 240.90      | 713.55       |                   |
| Side sewers                                    | 5,849.58    | 438.20     | 3,153.26    | 9,441.04     |                   |
| Main sewers                                    | 11,884.21   | 887.74     | 6,352.08    | 19,124.03    |                   |
| Manhole covers                                 | 358.62      | 25.91      | 192.49      | 577.02       |                   |
| Catchbasin covers                              | 286.69      | 22.50      | 158.12      | 467.31       |                   |
| Wet downs                                      | 2,212.27    | 165.06     | 1,182.44    | 3,559.77     |                   |
| Cleaning catchbasins                           | 1,831.27    | 131.58     | 949.95      | 2,912.80     |                   |
| Barricades                                     | 7,067.75    | 523.28     | 3,774.22    | 11,365.25    |                   |
| Miscellaneous*                                 | 10,521.52   | 1,330.69   | 2,939.76    | 14,791.97    |                   |
| Miscellaneous purchases                        |             |            |             | 9,516.42     |                   |
|                                                |             |            | Grand total | \$349,833.00 |                   |

\*Yard service, fill at various locations, sewage pumping station cleanup, DPW orders, test holes, etc.

BUREAU OF STREETS

P. W. King, General Superintendent

The Bureau of Streets is responsible for the maintenance, repair and cleaning of all streets and boulevards, including State Highways within the City and County of San Francisco, except those streets abutting the waterfront and which are under the jurisdiction of the State Board of Harbor Commissioners as established by statutes of the Legislature of the State of California. It is also responsible for the operation and maintenance of bridges at Third Street and Channel, Fourth Street and Channel, and Third Street and Islais Creek.

The Bureau is divided into two Divisions: Street Repair and Street Cleaning. Operations of each division will be presented separately.

DIVISION OF STREET REPAIRFUNCTIONS

Many worn-out street surfaces were repaved with an asphalt wearing surface. Minor repairs were made to brick, basalt block, and concrete pavements. New concrete gutters, sidewalks, and curbs were constructed. Some granite curbs in the industrial and commercial districts were re-dressed and reset.

Street pavements had become unsightly due to cracks developing in the wearing surface. In some cases the crack had become so wide and the "lips" along the edge of the crack so high that a strip about eight inches wide was entirely cut out and the space filled with fine gravel and emulsified asphalt.

Surface heaters were used for heating the asphalt on streets where it became necessary to remove rolls, and then sheet asphalt surface was placed after the burned pavement was raked off.

No planing of bituminous surfaces was done during the past fiscal year.

This division resurfaces the track areas for the Municipal Street Railway System, operates the Municipal Asphalt Plant and the bridges, removes fallen trees from streets after storms, clears away land slides and removes sand from the streets in sections of the City where the property has not been built upon.

#### PERSONNEL

The personnel as of June 30, 1946, was as follows:

|                         |                                                                       |
|-------------------------|-----------------------------------------------------------------------|
| Supervising             | 1 General superintendent (also in charge of Street Cleaning Division) |
|                         | 1 Supervisor                                                          |
|                         | 2 General foremen                                                     |
| Per Diem                | 1 Foreman - Asphalt finisher                                          |
|                         | 7 Sub-foremen - Asphalt finishers                                     |
|                         | 10 Asphalt finishers                                                  |
|                         | 25 Asphalt workers                                                    |
|                         | 2 Labor foremen                                                       |
|                         | 34 Laborers                                                           |
|                         | 13 Chauffeurs                                                         |
|                         | 4 Granite cutters                                                     |
|                         | 3 Cement finishers                                                    |
|                         | 4 Cement finishers' helpers                                           |
|                         | 2 Pavers                                                              |
|                         | 2 Rammers                                                             |
|                         | 2 H & P Engineers                                                     |
| Municipal Asphalt Plant | 1 Foreman                                                             |
|                         | 2 Dryerman                                                            |
|                         | 1 Mixerman                                                            |
|                         | 1 Laborer                                                             |
|                         | 3 Asphalt workers                                                     |
|                         | 1 Engineer                                                            |
|                         | 1 Asphalt worker (Night watchman for boilers)                         |
| Bridges                 | 11 Operating Engineers                                                |
|                         | 10 Watchmen                                                           |

#### ORGANIZATION

|                        |                            |
|------------------------|----------------------------|
| Supervising            | 1 General superintendent   |
|                        | 1 Supervisor               |
|                        | 2 General foremen          |
| Municipal Railway work | 2 Sub-foremen finishers    |
|                        | 2 Asphalt finishers        |
|                        | 8 Asphalt workers          |
|                        | 8 Laborers                 |
|                        | 2 Chauffeurs               |
| Crack Sealing          | 1 Sub-foreman finisher     |
|                        | 4 Laborers                 |
|                        | 2 Chauffeurs               |
| Asphalt Repairs        | 1 Foreman asphalt finisher |
|                        | 4 Sub-foremen finishers    |

|                                   |                                                                                |
|-----------------------------------|--------------------------------------------------------------------------------|
| Asphalt Repairs<br>(Continued)    | 8 Asphalt finishers<br>17 Asphalt workers<br>2 H & P Engineers<br>4 Chauffeurs |
| Brick and Basalt<br>Block repairs | 2 Pavers<br>2 Rammers                                                          |
| Broken and depressed<br>curbs     | 2 Granite cutters<br>4 Laborers                                                |
| Dressing curbs                    | 2 Granite cutters                                                              |
| Sidewalks and<br>angular corners  | 3 Cement finishers<br>4 Helpers<br>1 Chauffeur                                 |
| Clean-up                          | 1 Labor foreman<br>2 Chauffeurs<br>12 Laborers                                 |
| Yards (Miscel-<br>laneous work)   | 2 Laborers                                                                     |
| Lights and barri-<br>cades        | 1 Truck driver                                                                 |
| Compressor Units                  | 4 Gunmen (laborers)<br>2 Chauffeurs                                            |
| Dumps                             | 1 Foreman laborer                                                              |

#### Equipment

|                                                  |
|--------------------------------------------------|
| 18 Usable trucks - 3 to 5 tons                   |
| 2 Obsolete trucks                                |
| 1 8-ton Austin roller                            |
| 2 8-ton Gallion rollers                          |
| 1 #60 McCormick-Deering tractor                  |
| 1 Sand loader                                    |
| 1 Hand-operated Austin blade                     |
| 2 Bitumuls spray machines                        |
| 1 Mud jack                                       |
| 2 Surface heaters - power-driven                 |
| 1 Surface heater - small                         |
| 2 Hand-operated asphalt burners                  |
| 2 Truck-mounted compressors                      |
| 1 Truck-mounted compressor (waiting for chassis) |
| 1 Trailer compressor                             |
| 1 300-gallon oil supply trailer                  |
| 6 Rented trucks                                  |
| Miscellaneous small equipment                    |

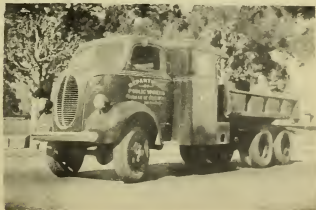
#### Equipment on order since September 4, 1945.

|                                   |
|-----------------------------------|
| 3 G. M. 5-ton trucks              |
| 2 Chevrolet 1/2-ton pickup trucks |
| 1 Shovel loader                   |
| 1 1-1/2 ton chassis               |

(Since September, 1945, other orders have been placed)



The year 1945-1946 has been most difficult due to the war effort which made equipment unavailable except for government orders, and due further, since V-J Day, to the slowness of changing to peacetime achievement. Many corporations that bid on equipment could not, or would not, furnish it at the bid price. A contract for a small gasoline-driven shovel was awarded to the company furnishing the tractor, and thereafter something happened about delivery of the attachment (loading equipment). The contract was awarded on October 30, 1946, and to date there has been no delivery and no attempt to make delivery. The same thing has happened to our contracts for trucks that range in capacity from one-half to five tons' capacity. In addition, either the company furnishing the main equipment or the one supplying attachments has been affected by strikes, such as the coal strike, and there is nothing to do but wait for the settlement of the difficulties or penalize the companies for non-compliance with their contracts. The attitude of the equipment contractors seems to be to force the cancellation of old contracts and call for new bids with resultant increase in price - or no equipment. Since the budget has been set up for the fiscal year, there is no way to increase the appropriation. Therefore, it is necessary to await the budget for the following year, causing a year's delay in receiving the equipment.



Truck with protective cab for workmen



Clement Street  
Track work is low



Hayes Street - Basalt block pavement  
treated with emulsified asphalt and gravel

WORK DONE

Pine Street, a one-way main artery with a vitrified brick center strip, became so slippery due to small particles of synthetic tires on the street that whenever a slight rain occurred it was necessary to sand the pavement until the drizzle stopped or a heavier rain occurred enabling the automobiles to gain traction. The strip was later coated with rock and a high viscosity emulsified asphalt which method did not prove successful as, due to the steep grades, the natural tendency was to roll up the surface, especially at the start of an upgrade. It appears that the only satisfactory solution will be to remove the brickwork and replace with a concrete pavement.

Repairs to the street surface in the area for which the Municipal Railway is responsible was the largest item of work done by the division. The private company which previously operated the street railways had neglected the maintenance of roadbeds and the Municipal System is confronted with an immense backlog of work.

The picture of Clement Street shows the temporary work where the track has settled into the ties and the pavement is cut back so as to conform to that outside the street railway area.

The type of pavement on Hayes Street was adopted for the reason that if the blocks had been covered with topeka the pavement would have been too high, causing the motor boxes to drag on the pavement; hence the use of the minimum amount of asphaltic material.

Since it is the intention of replacing these electric lines with trolley coaches or motor coaches as soon as possible, the Public Utilities Commission is trying to avoid any major track reconstruction.

Sand removal in the Sunset District is a serious problem during the period between the construction of the street pavement and the construction of houses. The property is generally higher than the street and this condition, abetted by a continuous west wind,



Quintara Street between 32d and 33d Avenues  
(Pavement constructed - no buildings)  
\_\_\_\_ Before removal of sand



Same location - (Buildings constructed)  
After removal of sand

causes the movement of sand onto the streets. The use of the sand loader speeds the removal of the material, but the work has to be done frequently during the summer months.

The total expenditures of the Division for the fiscal year 1945-1946 totaled \$613,174.81, consisting of four main items, to wit:

|                            |                   |
|----------------------------|-------------------|
| Bridges                    | \$ 78,041.69      |
| Asphalt Plant              | 86,401.78         |
| Interdepartmental Services | 153,797.42        |
| General Services           | <u>294,933.92</u> |
|                            | \$613,174.81      |



Gutter under construction.  
Barricades did not prevent passer-by from leaving  
imprint of his foot in the fresh concrete.

STATISTICAL DATA

## Cost of Operating Bridges

|           | <u>Wages</u>       | <u>Retire-<br/>ment</u> | <u>Power</u>      | <u>Misc.</u>      | <u>Total</u>       |
|-----------|--------------------|-------------------------|-------------------|-------------------|--------------------|
| 1945      |                    |                         |                   |                   |                    |
| July      | \$6,286.42         | \$315.64                | \$142.82          | \$ 36.16          | \$6,781.04         |
| August    | 6,015.71           | 281.99                  | 147.20            | 266.64            | 6,711.54           |
| September | 6,276.10           | 295.42                  | 139.66            | 328.68            | 7,039.86           |
| October   | 6,227.23           | 301.08                  | 162.83            | 220.62            | 6,911.76           |
| November  | 6,236.44           | 318.19                  | 176.00            | 61.97             | 6,792.60           |
| December  | 5,813.45           | 315.36                  | 218.86            | 169.76            | 6,517.43           |
| 1946      |                    |                         |                   |                   |                    |
| January   | 5,803.87           | 311.75                  | 256.76            | 29.04             | 6,401.42           |
| February  | 5,843.71           | 314.18                  | 216.52            | 86.63             | 6,461.04           |
| March     | 5,307.59           | 296.65                  | 211.26            | 324.02            | 6,139.52           |
| April     | 5,304.78           | 286.99                  | 179.55            | 131.12            | 5,902.44           |
| May       | 5,499.23           | 292.50                  | 150.93            | 227.88            | 6,170.54           |
| June      | 5,594.48           | 293.95                  | 153.91            | 170.16            | 6,212.50           |
|           | <u>\$70,209.01</u> | <u>\$3,623.70</u>       | <u>\$2,156.30</u> | <u>\$2,052.68</u> | <u>\$78,041.69</u> |

These costs divided among bridges as follows:

|           | <u>Third<br/>Street</u> | <u>Fourth<br/>Street</u> | <u>Islais<br/>Creek</u> |                    |
|-----------|-------------------------|--------------------------|-------------------------|--------------------|
| 1945      |                         |                          |                         |                    |
| July      | \$2,499.08              | \$2,126.08               | \$2,155.88              |                    |
| August    | 2,439.69                | 2,224.56                 | 2,047.29                |                    |
| September | 2,537.28                | 2,294.44                 | 2,208.14                |                    |
| October   | 2,876.55                | 1,988.74                 | 2,046.47                |                    |
| November  | 2,492.18                | 2,112.30                 | 2,188.12                |                    |
| December  | 2,275.31                | 2,236.30                 | 2,005.82                |                    |
| 1946      |                         |                          |                         |                    |
| January   | 2,250.47                | 2,224.29                 | 1,926.66                |                    |
| February  | 2,237.46                | 2,345.19                 | 1,878.39                |                    |
| March     | 2,160.92                | 2,058.47                 | 1,920.13                |                    |
| April     | 2,028.93                | 1,956.91                 | 1,916.60                |                    |
| May       | 2,172.37                | 2,005.05                 | 1,993.12                |                    |
| June      | 2,277.81                | 2,022.45                 | 1,912.24                |                    |
|           | <u>\$28,248.05</u>      | <u>\$25,594.78</u>       | <u>\$24,198.86</u>      | <u>\$78,041.69</u> |

Cost of Operating Municipal Asphalt Plant

|           | <u>Output<br/>(Tons)</u> | <u>Cost of Labor<br/>and Materials</u> | <u>Cost<br/>Per ton</u> |
|-----------|--------------------------|----------------------------------------|-------------------------|
| 1945      |                          |                                        |                         |
| July      | 2,004.15                 | \$ 6,641.42                            | \$3.314                 |
| August    | 1,876.60                 | 6,482.30                               | 3.454                   |
| September | 2,342.35                 | 6,754.24                               | 2.884                   |
| October   | 2,962.50                 | 7,968.81                               | 2.69                    |
| November  | 2,225.25                 | 6,667.07                               | 2.996                   |
| December  | 1,516.45                 | 5,229.05                               | 3.448                   |
| 1946      |                          |                                        |                         |
| January   | 2,395.70                 | 7,244.29                               | 3.026                   |
| February  | 2,205.80                 | 7,007.03                               | 3.097                   |
| March     | 2,481.50                 | 7,912.77                               | 3.015                   |
| April     | 2,798.05                 | 8,485.56                               | 3.032                   |
| May       | 2,899.95                 | 9,109.16                               | 3.141                   |
| June      | 2,197.75                 | 6,900.08                               | 3.159                   |
|           | <u>27,906.05</u>         | <u>\$86,401.78</u>                     | <u>\$3.096</u>          |

Interdepartmental Work

For

|                     |                                 |                     |
|---------------------|---------------------------------|---------------------|
| Building Repair     | 2,976 sq. ft. asphalt surface   | \$ 283.33           |
|                     | Miscellaneous work              | 2,039.91            |
| School Yards        | 127,498 sq. ft. asphalt surface | 5,548.06            |
|                     | 18,700 lin. ft. crack sealing   | 321.55              |
| Golden Gate Park    | 104,784 sq. ft. asphalt surface | 5,573.06            |
| Side Sewers         | 56,279 sq. ft. asphalt surface  | 18,698.43           |
| Main Sewers         | 1,442.60 tons sand              | 1,730.49            |
| Municipal Railway   | 849,001 sq. ft. asphalt surface | 116,596.39          |
| State Highway #2    | 11,523 " " " "                  | 1,177.10            |
| " " #68             | 6,663 " " " "                   | 839.34              |
| " " #56             | 802 " " " "                     | 390.35              |
| " " #55             | 342 " " " "                     | 43.00               |
| Engineer's Office:  | Lake Merced Trestle             | 217.31              |
| Farmers' Market:    | 1525 sq. ft. asphalt surface    | 248.65              |
| Miscellaneous Work: | Leveling dumps                  | 90.45               |
|                     |                                 | <u>\$153,797.42</u> |

## Bureau of Streets

General Repairs to Streets

|                                  | <u>Area</u>       | <u>Expense</u>      |
|----------------------------------|-------------------|---------------------|
| Asphalt Repairs                  | 2,061,640 sq. ft. | \$147,921.38        |
| Basalt Repairs                   | 426 " "           | 197.70              |
| Brick Repairs                    | 11,643 " "        | 7,982.09            |
| Concrete Repairs                 | 4,558 " "         | 1,843.88            |
| Crack Sealing                    | 618,725 lin. ft.  | 9,767.64            |
| Duck bumps                       | 106               | 642.10              |
| Safety zone, Third & Market Sts. | 1                 | 420.29              |
| Special Contract #573            |                   | 2,248.00            |
| Granite Curb, Re-dressed         | 4,602 lin. ft.    | 6,536.57            |
| Granite Curb, Reset              | 14,499            | 19,017.19           |
| Concrete Curbs, Reset            | 7,607             | 6,735.69            |
| Main Sewers paved                | 30,903 sq. ft.    | 14,315.49           |
| Sidewalk Repairs                 | 73,589 " "        | 24,839.34           |
| Paving for Dept. of Electricity  | 426 " "           | 184.39              |
| Sealing for Fire Department      | 715 " "           | 221.61              |
| Temporary Roads                  |                   | 5,592.15            |
| Miscellaneous Work               |                   | 37,149.76           |
| Hired truck charges              |                   | 176.32              |
| Miscellaneous purchases          |                   | <u>9,142.33</u>     |
|                                  |                   | <u>\$294,933.92</u> |

\*Miscellaneous work covers the cartage of equipment, removal of sand in Sunset and Parkside Districts, removal of trees and debris after storms, cleaning up slides, cleaning and repairing equestrian paths around Lake Merced, repairing various stairways and structures, removing excess bumps from safety zones, burning unnecessary white traffic lines from streets, cleaning and repairing various spillways, and cleaning excess debris from various municipal buildings after shows or exhibitions.



DIVISION OF STREET CLEANINGFUNCTIONS

The Division is responsible for the sanitation and cleaning of approximately 1600 miles of paved streets within the City and County of San Francisco, five underpasses, Stockton Street Tunnel, also numerous pedestrian stair and passageways. Vacant City-owned lots in built-up sections are kept in a clean and sightly condition. All of the street sweepings and debris collected are hauled away to two dumping grounds where they are disposed of by the fill and cover method.

PERSONNEL

The personnel as of June 30, 1946, was as follows:

|             |                                                                        |
|-------------|------------------------------------------------------------------------|
| Supervisory | 1 General Superintendent (also in charge of Division of Street Repair) |
|             | 1 Supervisor                                                           |
|             | 4 District Directors                                                   |
| Per diem    | 12 Labor Sub-foremen                                                   |
|             | 45 Chauffeurs                                                          |
|             | 1 Gardener                                                             |
|             | 260 Laborers                                                           |

ORGANIZATION

The regular work week is five days, or forty hours. One sweeping crew with automotive equipment works five nights each week. On Sunday morning and all day Saturday, skeleton crews are employed to cover the most important business sections of the City.

The City is divided into four major districts, each being under the supervision of a district director. The districts are divided into sub-districts which are swept by gangs and truck crews under the supervision of labor sub-foremen. Eleven gangs are used in the residential districts with a twelfth one to be re-established as soon as men and equipment are available. The localities requiring daily or near daily service are swept by 132 blockmen. Seven motor flusher routes are covered daily as are six motor sweeper routes. Seven street can routes are in operation, serviced by three utility trucks. Eight truck routes operate as

combination paper pick-up from street cans and dirt pick-up from motor sweepers.

Three garages in advantageously chosen locations are used to house the equipment.

The cost of operating the division including labor, material and equipment, for the fiscal year 1945-1946 was \$833,845.

#### Equipment

- 30 Trucks
  - 1 Rented truck
  - 4 Standard Elgin motor sweepers
  - 1 Standard Austin sweeper
  - 3 Standard Austin patrol motor sweepers
  - 6 Motor flushers
- 100 Street buggies
- 1600 Street cans
- 97 Street sheds

#### Equipment on Order

- 6 Trucks
  - 1 Austin Western Motor Sweeper
- 18 Can sheds



Motor-driven sweepers - used against curbs

BUREAU OF ACCOUNTS

F. W. McKenzie, Supervisor

FUNCTIONS

The Bureau of Accounts controls the budgetary and financial activities of the Department. It is the point of origin of documents dealing with the disbursement of funds, and their guidance through required procedures until final liquidation.

The operating functions of the Bureau embrace control of pay roll procedure, personnel records and field-timekeeping; purchase order requisitions, sub-storeroom and inventories; automotive expenditures and gasoline and tire records; work order job costs and invoicing; side sewer job and refund accounts; State gas tax subventions; the cash revolving fund for the Department; budget preparation and control; operations of the Corporation Yard telephone exchange; and the supplying of clerical service to all Bureaus of the corporation yard.

Reports to the Director of operations in Building Repair, Sewers, Street Repair, and Street Cleaning are prepared monthly by the Bureau of Accounts from the records maintained in the Bureau.

Job costs pertaining to property of the City damaged by outside causes, falling within the scope of the department's control, are compiled and forwarded for collection.

PERSONNEL

The personnel of the Bureau as of June 30, 1946, was as follows:

- 1 Supervisor in charge of the Bureau
- 1 Head Clerk
- 2 Bookkeepers
- 4 Senior Clerks
- 11 General Clerks
- 3 General Clerk-Stenographers
- 4 General Clerk-Typists
- 1 Telephone Operator

### ORGANIZATION

The bureau has a central office in the City Hall. The handling of operating accounts is done at the Corporation Yard where the majority of the employees are assigned.

The work is divided into three well defined classes as:

Payrolls and Personnel with 2 senior clerks and 5 general clerks in the office. Three general clerks act as field-timekeepers for payroll verification and also act as paymasters on semi-monthly payrolls, delivering pay warrants to employees on the job.

Purchasing and Stores with 1 senior clerk and 1 general clerk.

Gas Tax Subventions with 1 senior clerk and 1 general clerk.

### OPERATIONS

A sub-storeroom and material yard are operated for the supplying of materials for the varied activities of the department.

A Stores Revolving Fund in an amount of \$50,000 is placed under control of the Bureau, and is designed to permit the advance purchase of constantly-used materials. Plumbing supplies, electrical items, paints, hardware, lumber, glass, tools, sewer pipe, brick, cement, castings and miscellaneous needs which can be foreseen, are in Stores and charged out to the various branches of the work as used. Controls have been established which facilitate monthly reimbursements for goods withdrawn, and stores' records are maintained on a perpetual inventory basis subject to annual physical check.

The Departmental Cash Revolving Fund was increased during the year to \$1,500 in order to handle transportation charges. This change eliminated considerable paper work, and expedites clearing of reimbursement to employees using their own cars in City service.

### WORK DONE

The Bureau compiled and forwarded for collection bills in 115 cases in the amount of \$11,583.19 involving damages to structures under the control of the Department, and covered damages to bridges,

automotive equipment, street structures, traffic signals, and prisoner-damage to police stations; 915 individual deposits were filed by property owners in the amount of \$125,004.04 for side sewer installations and repairs; 13,974 transactions were handled involving the delivery of various items from the sub-storeroom and material yard to the jobs; 4402 requisitions and 4110 delivery orders were issued to vendors.

### STATISTICAL DATA

#### Budgeted funds subject to control and appropriated to -

|                                         |              |
|-----------------------------------------|--------------|
| Bureau of Accounts                      | \$ 42,615.00 |
| Bureau of Architecture                  | 16,810.00    |
| Bureau of Building Inspection           | 67,277.00    |
| Bureau of Building Repair               | 533,784.00   |
| Central Permit Bureau                   | 14,995.00    |
| Bureau of Engineering                   | 1,755,060.00 |
| Sewage Disposal Plant                   | 104,612.00   |
| Sewage Pumping Stations                 | 40,530.00    |
| General Office                          | 183,634.00   |
| Bureau of Sewer Repair                  | 390,889.00   |
| Bureau of Streets:                      |              |
| Street Repair                           | 449,125.00   |
| Street Cleaning                         | 756,134.00   |
| Bridges                                 | 80,048.00    |
| Gas Tax (Special Road Improvement)      | 263,645.00   |
| Special Gas Tax-Street Improvement Fund | 350,000.00   |
| Gas Tax - Street Construction           | 241,509.00   |

\$5,290,667.00

#### Interdepartmental service under work order procedure for the following divisions of the City government:

|                              |               |
|------------------------------|---------------|
| Schools                      | \$ 338,304.15 |
| Health                       | 95,102.56     |
| Recreation                   | 29,392.34     |
| Library                      | 13,026.49     |
| Public Building Improvements | 114,683.23    |
| Gas Tax Accounts             | 363,895.52    |
| Engineering                  | 336,383.73    |
| Sewage Plants                | 7,200.00      |
| Public Utilities             | 139,122.39    |
| General Office               | 1,049,296.00  |
| Sewer Bonds                  | 201,812.00    |
| Miscellaneous                | 74,193.41     |

2,762,411.82

#### Side sewer Installations and repair expenditures

125,004.04

TOTAL transactions for the year

\$8,178,082.86

BUREAU OF BUILDING REPAIR

R. A. Chisholm, Superintendent

FUNCTIONS

This Bureau is primarily a maintenance and repair organization and does not undertake any major construction. The main objective is to give service to all City Departments asking for it, and to date we have succeeded without any major complaints.

The Bureau furnishes labor and materials for the repair, alterations and painting of City-owned buildings that are under the control of the Director of Works. It performs similar services for the Board of Education and other municipal departments under work order procedure.

It furnishes labor and material for traffic striping, pedestrian lane markings at street intersections, and markings for loading and parking zones on curbs, bus stop and safety zones.

The Bureau in addition to the above furnishes personnel for the operation of the City Hall, Hall of Justice, Health Center Building, Emergency Hospitals, Police Stations, and Fire Houses, and is also responsible for the operation of the Civic Center Power House which furnishes heat to the Civic Auditorium, Public Library, Health Center Building, and the City Hall.

PERSONNEL

The personnel includes one superintendent and six general foremen supervising 160 to 164 mechanics, supplemented by additional seasonal workers, representing 13 building crafts employed in repairs and alterations and 106 persons employed in the operational work.

The classification of employees is:

|                 |                                           |
|-----------------|-------------------------------------------|
| <u>Repairs:</u> | 1 Superintendent                          |
|                 | 6 General Foremen                         |
|                 | 27 Plumbers                               |
|                 | 14 Steam Fitters                          |
|                 | 12 Sheet Metal Workers                    |
|                 | 16 Electricians                           |
|                 | 40 Painters                               |
|                 | 13-15 Cement Finishers and Cement Workers |
|                 | 25 Carpenters                             |

4 Locksmiths  
4 Glaziers  
2 Plasterers  
1 Tile Setter  
2-4 Bricklayers  
Additional seasonal workers

Operational:

2 Chief operating Engineers  
7 Operating Engineers  
5 Junior Operating Engineers  
16 Elevator Operators  
1 Supervisor of Janitors  
5 Foreman Janitors  
58 Janitors  
2 Janitresses  
7 Window Cleaners  
3 Watchmen

ORGANIZATIONPlumbing Division - 27 men

There are eight to ten men on regular assignments to the Fire Department, City Hall, San Francisco Hospital, County Jail #2, Hall of Justice, and Laguna Honda Home; and at different times during the day, it is necessary to send additional men to take care of emergency calls. Miscellaneous repairs to toilet facilities, etc. in school buildings, require six to eight men. On work orders for repairs and new installation of plumbing facilities, from six to eight men are constantly employed; but due to labor and material shortage, we are way behind in this work. The Recreation Department keeps two men, with a truck, busy every day just taking care of emergency calls. In connection with the Bayshore Freeway and the Army Street Widening projects, the City has acquired a group of buildings which it is obliged to keep in repairs; and this is done on work orders from the Real Estate Department. We are constantly sending not only plumbers, but electricians, locksmiths, steamfitters, and sheet metal mechanics in an effort to keep these tenants happy. Calls from the Emergency Hospitals, Health Buildings, and Women's Jail Quarters receive priority over other calls.

Steam Division - 14 men

There are four men regularly assigned to the City Hall, Hall of Justice, Laguna Honda Home, and San Francisco Hospital. The

Board of Education keeps three or four men busy on emergency repairs at all times; others are engaged on special work orders for renewal of steam lines, traps, and vacuum equipment. The steam lines around the City Hall area have to be serviced and repaired at least once a year. The Municipal Railway, Fire Department, Emergency Hospitals, Public Welfare Department and Real Estate Department keep the rest of the crew steadily employed.

Sheet Metal Division - 12 men

The Bureau does not assign the men of this craft to any particular building. The work is mainly repairs to various buildings, of cornice work, ventilating systems, tile roofs, and metal doors. The Division makes street cans, buggy pans, and scoops for the Bureau of Streets. The Recreation Department has had several of its club houses reroofed with metal this year. By shopping around we were able to secure this scarce material and complete the work. The Board of Education daily requisitions men to take care of emergency conditions.

Electrical Division - 16 men

Two men are assigned regularly to the City Hall and Hall of Justice. The City Hall man takes care of emergency calls from the Health Building and Central Emergency Hospital. The one at the Hall of Justice also takes care of the County Jail and City Prisons and the Harbor Emergency Hospital. Five men are assigned to the Board of Education on their monthly work order and one on a special work order for their Training School. The San Francisco Airport as well as the San Francisco Hospital has a man almost continuously from this division. The balance of the division employment is on work orders from other departments, mainly, the Water Department, Health, Public Utilities, Fire Department, etc.

Painting Division - 40 men

Four men are on regular assignment at the City Hall, San Francisco Hospital, and Fire Department.

There are twelve men on street traffic painting under orders



from the Engineering Bureau. They are required to work on Sundays, and during the summer are out at daylight to do work in the congested districts. Curb painting under orders from the Police Department occupies the time of four men; they operate from two trucks, covering different parts of the City. All of the metal letters, or stencils (as they are called) that are necessary in this work, are made up in the Sheet Metal Shop. Two men are assigned to the Board of Education's regular monthly Miscellaneous Work Order, and are busy touching up all repair work of the other trades. There are from twelve to fourteen men continually employed on work orders from the School Department, Superior Courts, Public Utilities (San Francisco Airport), Public Welfare, Health Department, Department of Public Works (Budget), Purchasing Department, Real Estate Department, War Memorial Commission, and various other departments.

Cement Work Division - 13 to 15 men

This division takes care of all requests from all the other divisions in this Bureau to assist in their work, such as opening up ground for broken water-pipes, choked sewers, drilling for electric conduits and replacing walks and yards which have been opened up. It has four to six men working continuously in school yards filling in depressions and bad cracks in the asphalt work.

Carpentry Division - 25 men

There are six or seven men assigned regularly to the City Hall, Hall of Justice, San Francisco Hospital, and Fire Department.

Five men work on miscellaneous school requisitions taking care of complaints such as door and window repair, replacing door checks, various kinds of cabinet work, yard benches, and other jobs, too numerous to mention.

The remaining ten to fifteen men are always busy on work orders from other City Departments doing all kinds of alteration work, including bridge repair (replacing planking), and putting up and removing stands and bleachers on orders from the Chief Administrative Officer.

Miscellaneous Trades Division

Locksmiths- Four locksmiths are constantly engaged answering emergency calls from all departments of the City, especially the Recreation Department with their gates and club houses being continually broken into. The School Department problem is very serious as the master keys are either lost or stolen, with the result that the schools are entered at night and badly damaged, and then comes the call to change all locks, and so it goes on and on.

Glaziers- 4 men

Continually replacing broken glass, especially during vacation period.

Plasterers - 2 menTile Setter - 1 man

Busy on patching and repair work in all City-owned buildings.

Bricklayers - 2 to 4 men

These men work only during the school vacation period when the school boilers are re-bricked.

DELAYED WORK

At the present time we have a backlog of 4,550 days on special work orders with approximately 60 men to do this work. This backlog is due mainly to shortage of good mechanics as well as materials.

We have filed requests with the Purchasing Department for several trucks which will help our operations considerably, if and when we get them.

STATISTICAL DATA

Operations for the year entailed the following expenditures:

|                               |                 |
|-------------------------------|-----------------|
| Superintendence               | \$ 26,445.16    |
| *Building and yard operations | 270,220.00      |
| Automotive repairs            | <u>4,081.00</u> |

\$ 300,746.16

Maintenance and repair of general government buildings performed with funds allocated to the Bureau consisted of:

|                          |                  |
|--------------------------|------------------|
| Fire Stations            | \$ 21,575.25     |
| Police Stations          | 4,517.35         |
| County Jails             | 7,496.81         |
| Hall of Justice          | 13,100.58        |
| City Hall                | 24,335.05        |
| San Francisco Hospital   | 9,152.80         |
| Juvenile Detention       | 1,339.54         |
| Miscellaneous Structures | <u>37,579.67</u> |

119,097.05

Work order performance appeared in three general sub-divisions:

|                  |                   |
|------------------|-------------------|
| Schools          | \$ 331,493.08     |
| Traffic Striping | 88,691.58         |
| Various          | <u>200,334.00</u> |

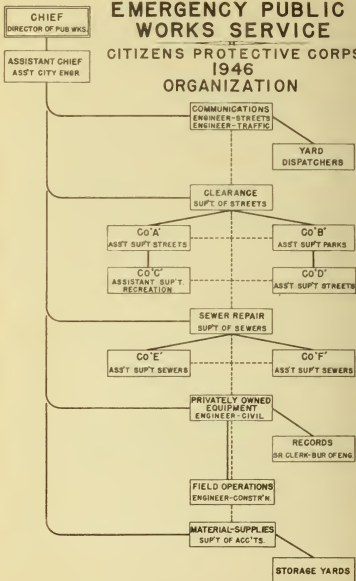
620,518.66

\$1,040,361.37

\*Engineers, watchmen, elevator operators, janitors, etc.

# EMERGENCY PUBLIC WORKS SERVICE

## CITIZENS PROTECTIVE CORPS 1946 ORGANIZATION



CITIZENS' PROTECTIVE CORPS

The cessation of hostilities on V-J Day caused the interest of volunteer workers in the various services of the Citizens Protective Corps to dwindle rapidly. This was particularly true of the volunteer membership of the Emergency Public Works Service, which because of its very small membership was disbanded in September, 1945.

Early in November, 1945, the United States Army called in all of the impervious gas suits and Army training gas masks loaned to our Decontamination Service with the result that our Gas Cleansing Crews could no longer operate and the large Decontamination Crew Headquarters and Cleansing Station, built especially for this service was abandoned. All City-owned equipment, such as approximately 300 pairs of heavy work shoes, 300 suits of heavy underwear, socks, towels, rubber gloves, and small tools, was sent to the City warehouse. The headquarters building has been turned over to the Purchaser of Supplies for use as an electrical and tire repair shop.

Since the elimination of the decontamination service, the Emergency Public Works Service has been reorganized into street and sewer clearance and repair squads as shown on the opposite page. The men and equipment of three City departments (Public Works, Park, and Recreation) were organized into squads to function in cases of an emergency under their own superintendents and foremen. This force consists of about 1,150 men and makes a nucleus of City employees around which organized or even unorganized volunteer workers could be formed into useful work units. All City-owned equipment in these departments is available for any type of disaster. In addition, a current list of privately owned equipment available in San Francisco is maintained in the office of the Bureau of Engineering.

The remaining fifteen of the original twenty-two clearance depots have been abandoned and all equipment removed. Activities formerly centered at these depots have been transferred to the yards of the three departments making up this Corps. A large quan-

tity of the sewer pipe, common brick, oakum, cement, lumber, and small tools, has been turned over to the Bureau of Sewer Repair for its use.

At the present time there is under consideration by the Board of Supervisors the adoption of an ordinance forming a Disaster Council and Disaster Corps for the City and County of San Francisco which would be organized under an existing State Act. Such action would, of course, carry a provision for the repealing of the ordinance setting up the existing Citizens' Protective Corps.



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**ANNUAL REPORT**  
**of the**  
**DEPARTMENT OF PUBLIC WORKS**  
**CITY AND COUNTY OF**  
**SAN FRANCISCO**

---

**Fiscal Year Ending June 30, 1947**



ANNUAL REPORT

of the

DEPARTMENT OF PUBLIC WORKS

City and County of San Francisco

Fiscal Year Ending June 30, 1947

ROGER D. LAPHAM

Mayor

THOMAS A. BROOKS

Chief Administrative Officer

HARRY C. VENSANO

Director of Public Works



CITY AND COUNTY OF SAN FRANCISCO  
DEPARTMENT OF PUBLIC WORKS

---

November 1, 1947

OFFICE OF THE  
DIRECTOR OF PUBLIC WORKS

260 CITY HALL  
SAN FRANCISCO 2,  
CALIFORNIA

The Honorable Thomas A. Brooks  
Chief Administrative Officer  
City and County of San Francisco  
California

Dear Sir:

In accordance with the provisions of Section 20 of the Charter of the City and County of San Francisco, I herewith submit the Annual Report of the Department of Public Works for the fiscal year ending June 30, 1947.

This department is responsible for the planning, construction, and maintenance of public buildings, streets, tunnels, bridges, traffic control devices, sewers, and sewage treatment plants. The department is also responsible for the operation of the sewerage system, and supervises all private building work. The various functions of the department are performed by nine bureaus, as indicated by the accompanying organization chart. The personnel of the department consisted of 1183 employees at the end of the fiscal year.

Following a brief general review of the year's work, the report contains separate statements of the functions and activities of the several bureaus as prepared by the respective bureau heads.

Yours respectfully,

*H. C. Vensano*

H. C. Vensano, Director  
Department of Public Works



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**MAYOR**  
ROGER D. LAPHAM

**CHIEF  
ADMINISTRATIVE  
OFFICER**  
THOS. A. BROOKS

# ORGANIZATION CHART

## DEPARTMENT OF PUBLIC WORKS

### 1946-1947

CITY AND COUNTY OF SAN FRANCISCO

**DEPARTMENT OF PUBLIC WORKS**  
DIRECTOR H. C. VENSANO  
ASS'T DIRECTOR SIDNEY J. HESTER

GENERAL OFFICE

BUREAU OF ENGINEERING  
CITY ENGINEER RALPH G. WADSWORTH

BUREAU OF ARCHITECTURE  
CITY ARCHITECT DODGE REIDY

BUREAU OF BUILDING INSPECTION  
SUPERINTENDENT JOHN G. LITTLE

BUREAU OF STREETS  
GENERAL SUPERINTENDENT PRESTON W. KING

BUREAU OF SEWER REPAIR  
SUPERINTENDENT EMILE MUHEIM

BUREAU OF BUILDING REPAIR  
SUPERINTENDENT RODERICK CHISHOLM

BUREAU OF ACCOUNTS  
SUPERVISOR FRANK W. MCKENZIE

CENTRAL PERMIT BUREAU  
HEAD CLERK SYLVAN J. ROSENBLUM



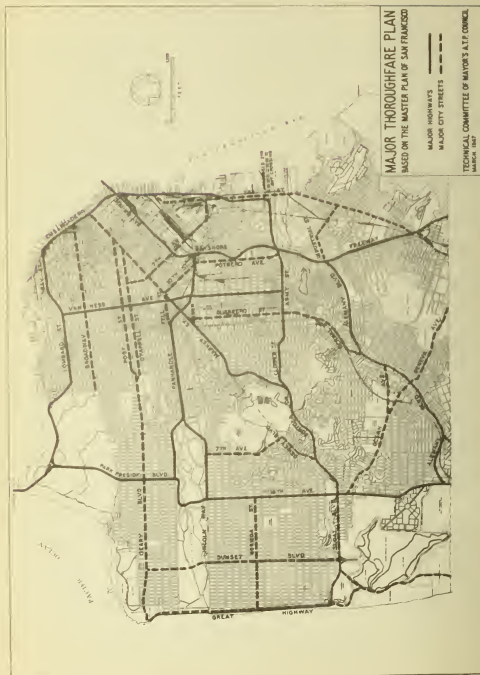
DEPARTMENT OF PUBLIC WORKS  
H. C. Vensano, Director

GENERAL REVIEW OF 1946-1947

The fiscal year 1946-1947 was a busy year in the Department of Public Works. In addition to normal routine operations, the department was engaged in (1) the Construction Program under the \$12,000,000 Sewer Bond Issue, (2) the production of a New Building Code, (3) the production of the Report of the Technical Committee of the Mayor's Administrative Transportation Planning Council entitled "Traffic, Transit and Thoroughfare Improvements for San Francisco," and (4) a program intended to initiate the removal of a number of car tracks abandoned by the Municipal Railway.

BUILDING CODE

A considerable portion of the time of the Director of Public Works during the year, together with that of the Superintendent of the Bureau of Building Inspection and his staff, was consumed in the production of a new building code. There had been no complete revision of the building code since 1909. The old code was entirely obsolete and a new code was long overdue and vitally necessary if the supervision of building construction was to continue to be done intelligently. The production of a building code is at all times a controversial matter and at this time became particularly so, due to the fact that for the first time an effort was being made to introduce provisions which would insure reasonable public safety from damage to buildings caused by earthquakes. After almost twenty-six months of work and many hearings before the Judiciary Committee and the Board of Supervisors, the code was finally passed and signed by the Mayor on August 12, 1947. Geo. S. Hill, Structural Engineer, was responsible for the actual writing of the code. Credit for collaboration should also go to John G. Little, Superintendent of the Bureau, Felix H. Spitzer, C. H. Potts,



Lester Bush, W.E.Laming (in connection with the Article on Boiler Inspection) and Frank Kelly, Chief of the Bureau of Fire Prevention and Public Safety.

MAYOR'S ADMINISTRATIVE  
TRANSPORTATION PLANNING COUNCIL

During the last half of the fiscal year the work of the Technical Committee relating to the proposal for a bond issue to be put before the voters in November, 1947, was being prosecuted. On recommendation of the City Planning Commission the Mayor on December 20, 1946, appointed an Administrative Transportation Planning Council consisting of the City Planning Commission, the Chief Administrative Officer, the Public Utilities Commission, and the Police Commission. On December 31, 1946, the Council in turn appointed the Manager of Public Utilities, the Director of Public Works, the Director of Planning, and the Assistant Chief of Police, as members of a Technical Committee to recommend a group of projects designed to improve traffic and transportation in our city for a proposed bond issue.

Upon formation of the Committee it was at once apparent that, before a group of projects could be suggested, it would first be necessary to outline an overall plan both of thoroughfares for vehicular traffic and routes for mass transportation lines. The studies of the committee were of necessity pushed rapidly as it was proposed to place the bond issue before the people in the spring of 1947. The committee's report was transmitted to the Council on March 3, 1947, by the Council to the Mayor on March 7, 1947, and by the Mayor to the Board of Supervisors on March 10, 1947. The Supervisors, however, declined to consider a spring date for a bond election and insisted on public hearings as well as the appointment of a Citizens' Advisory Committee to pass on the report of the Technical Committee. A Citizens' Advisory Committee consisting of Francis V. Keesling, Sr., Chairman, S. J. Bernhard, F. E. Bonner, N. A. Bowers, A. W. Earl, L. A. Elsener, E. E. Hutchin-

son and C. I. Magnin, was appointed by the Mayor. This Committee held meetings, questioned the Technical Committee and, after several weeks work, gave a very favorable finding on the work of the Technical Committee. As a result the Board of Supervisors approved the placing of the following bond issues on the November ballot for submission to the citizens of San Francisco.

|                                                     |              |
|-----------------------------------------------------|--------------|
| Municipal Railroad Rehabilitation Bonds, 1947 ..... | \$20,000,000 |
| Market Street Railroad Financing Bonds, 1947 .....  | 2,200,000    |
| Parking Bonds, 1947 .....                           | 5,000,000    |
| Street Improvement Bonds, 1947 .....                | 22,850,000   |

An accompanying map shows a skeleton plan of the system of Major Thoroughfares and Major Streets recommended by the Technical Committee.

#### SECOND BAY CROSSING

During this year the question of a Second Bay Crossing between San Francisco and Alameda County became active, as the present San Francisco-Oakland Bay Bridge had very nearly reached its maximum traffic capacity. A Joint Army-Navy Board was appointed by the federal government to advise on the question of whether or not a second bay crossing was needed and to recommend the general type and character of the structure. Public hearings lasting a full week were held, at which San Francisco presented its recommendations calling for a crossing which would carry railway traffic as well as automobile traffic and which it was suggested should terminate in San Francisco at a point on the bay shore in the general vicinity of Army Street. Supervisor Marvin Lewis headed the San Francisco delegation and spoke in favor of a second crossing, as did Congressman Richard J. Welch. San Francisco's technical case was presented by Ralph G. Wadsworth, City Engineer.

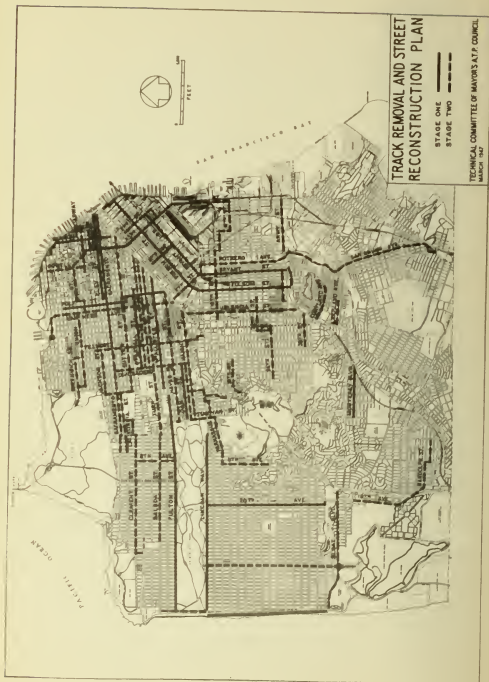
#### CONSTRUCTION PROGRAM

During this year our Sewer and Sewage Treatment Plant construction program was reorganized to take into account the 1946 legislation by the State of California allocating funds to the

various counties and municipalities of the State for the purpose of promoting public works. This money was allocated on a matching basis, one dollar of State funds to be provided for every dollar set up by a municipality for the construction of sewers, sewage treatment plants and other essential improvements. The allotment to San Francisco amounted to \$8,357,462.76. Of this total amount, \$7,959,078.97 is available for sewers and sewage treatment plant work. The balance of \$398,383.79 was required by the State law to be spent on highways and has been allocated for use in the construction of the Islais Creek Bridge. The sum of \$7,959,078.97, together with 1944 bond issue funds and certain tax funds included in past budgets, raised the amount provided to date toward our \$25,000,000 Sewer and Sewage Treatment Program to about \$22,000,000.

The Bureau of Engineering of the Department of Public Works during the year made substantial progress in pushing ahead the physical work in the field on the sewer system and on the enlargement of the Richmond-Sunset Sewage Treatment Plant. The bureau also made good progress toward completion of the plans for our North Point Sewage Treatment Plant although in a measure handicapped by shortage of engineering design personnel. At the same time the planning of the North Point Sludge Treatment Plant was being pushed by Mr. Clyde C. Kennedy, consulting engineer, under a private engineering contract. It is expected that this work will be complete and ready for bids toward the end of the calendar year of 1947. In the report of the Bureau of Engineering further details of the work done under this program will be found.

Our Street and Highway planning was also pushed rapidly and a considerable amount of construction work completed or let to contract. In this part of the work, however, the shortage of housing is still delaying some of our major projects such as the widening of Army Street and the opening up of Guerrero and San Jose Avenue from Army Street to a connection with the Bernal Cut.



Those portions of the Army Street project consisting of the widening of Guerrero Street from Market Street to Army Street and the opening up of Clipper Street as an extension of Army Street to Portola Drive, have been completed and are regarded as major accomplishments. The widening of Army Street itself has been ready to go to bids since October, 1945, and it is unfortunate that the housing situation prevented the Board of Supervisors from approving its immediate completion as it is a street project badly needed.

This fiscal year was still a most difficult year in the construction industry. The contractors working on our projects like all other constructors, had great difficulty in securing sufficient supplies of material and labor. By the end of the year this condition was improving somewhat but many difficulties are still being encountered in getting normal progress on construction projects.

#### TRACK REMOVAL PROGRAM

An effort was made to initiate a program for the removal of car tracks over which service has been abandoned and the reconstruction of the street from curb to curb. Such a program would materially improve street capacity for automobile traffic. It was possible, however, to complete only four blocks of this work, two on Bush Street west of Sansome Street and two on Sacramento Street west of Van Ness Avenue. The Department of Public Works was ready to proceed with this type of work on Sansome Street from Bush Street to the Embarcadero and on Kearny Street from Market to Broadway but it was impossible to award contracts because of shortage of funds in the hands of the Municipal Railway to pay for its share of the work. The cost of track removal and reconstruction of pavements in the franchise rights-of-way is the obligation of the Municipal Railway and cannot be legally paid for from any source of funds available to the Department of Public Works. The sum of \$10,500,000 has been set up as a portion of the Street Improvement Bond Issue to be voted on in November, 1947, for the purpose of do-

ing this type of work. An accompanying map shows the proposed track reconstruction program.

Efforts to repair or improve pavements adjacent to tracks which were a part of the Market Street Railway have been practically useless due to the fact that these old railway tracks are in such bad shape that any heavy load passing over them causes them to spring up and down to such an extent that paving patchwork is almost immediately destroyed.

#### EQUIPMENT

During this year there was some improvement in the amount of equipment available to us for both street repair and street cleaning use. Additional trucks were received, some of which had been under order for two years. However, the Street Repair Bureau is still in need of additional equipment in order to permit the increase in man-power necessary to care for the pavement repair work of the Municipal Railway. It will be remembered that the Utilities Commission turned over to the Public Works Department in the fiscal year of 1945-1946 all their paving repair work without warning and we are still endeavoring to build up our equipment to such a point that we can perform this added work as well as our own in a fully effective manner. Five trucks for the Bureau of Street Cleaning are yet undelivered.

#### PERSONNEL

The termination of limited tenure appointments and the impending release of a considerable group of men and women poses a serious problem for the administrative personnel of our Department. Many of these men and women have been with the Department for several years and have been trained to our needs. To release them in a body and install an untrained group in their stead is bound to create inefficiencies and difficulties in our Department for some time to come. No matter how bright an individual may be and no matter how capable one may be in the passing of civil service exami-



nations, it is none the less true that no one can be satisfactory in a position until trained in the special duties of a particular position.

During the year special difficulties were caused in the Bureau of Architecture by the resignation of three men from a total staff of five designers at the war's end. The City wage scale for this class has been too low to attract new employees. As a result the City Architect has been hard put to it to handle even the routine work coming to his Bureau and major planning has as a consequence been delayed. It is hoped with a new scale of pay and civil service examinations to be called shortly after the end of the fiscal year that the condition will be corrected in 1947-1948.

**BUREAU OF ENGINEERING**  
**DEPARTMENT OF PUBLIC WORKS**

**ORGANIZATION CHART**  
**1946-1947**

**CITY ENGINEER**  
**ASST CITY ENGINEER**

**STAFF SECTIONS**

**ADMINISTRATION**  
CONTRACTS-PERSONNEL-  
PURCHASING

**SURVEYS & MAPPING**  
STREET GRADES  
SUBDIVISIONS

**STAFF SECTIONS**

**RESEARCH & REPORTS**  
FRANCHISE REPORTS  
RESEARCH

**PROGRAMS & BUDGETS**  
STATE AID-PLANNING  
PROGRAMS

**LINE DIVISIONS**

**DIVISION OF  
STREETS & HIGHWAYS**

- 1-STREET IMPROVEMENTS
  - (a) PLANS & RECORDS
  - (b) ASSESSMENTS & PERMITS
  - (c) SIDEWALKS & COMPLAINTS
- 2-HIGHWAYS
- 3-TRAFFIC & SAFETY
- 4-SPECIFICATIONS & ESTIMATES
- 5-SPECIAL ASSIGNMENTS

**DIVISION OF  
DESIGN**

- 1-STRUCTURAL
- 2-SEWERS
- 3-SEWAGE DISPOSAL
- 4-MECHANICAL
- 5-ELECTRICAL
- 6-AUXILIARY WATER SUPPLY
- 7-UNDERGROUND STRUCTURES
- 8-ADMINISTRATIVE & CONTRACTS
- 9-ESTIMATES

**LINE DIVISIONS**

**DIVISION OF  
CONSTRUCTION**

- 1-INSPECTION
- 2-TESTING LABORATORY
- 3-SANITARY FILL

**RICHMOND-SUNSET  
SEWAGE TREATMENT PLANT**

- 1-LABORATORY
- 2-OPERATION

BUREAU OF ENGINEERING

Ralph G. Wadsworth, City Engineer

FUNCTIONS OF THE BUREAU

The work of the Bureau of Engineering is primarily concerned with highways, boulevards, streets, bridges, viaducts, sewers, sewage disposal, and operation of the Richmond-Sunset sewage treatment plant and eight sewage pumping stations. In connection with all major improvements carried out by the Department of Public Works, except those relating to public buildings, the Bureau of Engineering prepares plans and specifications and supervises construction in the field. The Bureau also performs many continuing functions related to street improvements, traffic control, street name signs, spur tracks, sidewalks and structures, auxiliary water supply system, sanitary fill, surveys, subdivisions, and maintenance of maps and records for public information. A further description of many of these functions will be found in the section of this report entitled, "Functions of Divisions and Sections."

GENERAL REVIEW OF YEAR'S WORKGENERAL

Activity in all divisions and sections of the Bureau continued at a high rate throughout the year. Development of new housing caused continuing demand for additional street improvements and new subdivisions and re-subdivisions. Design work proceeded on a wide variety of projects, the total output being restricted only by the difficulties in securing a sufficient number of fully qualified engineers and draftsmen. The awarding of contracts for major sewer contracts was deliberately retarded during the latter part of the year pending rebudgeting of funds made necessary by the high cost of contract work under current conditions.

CONSTRUCTION CONTRACTS

The Bureau was responsible for the plans and specifications for 124 construction contracts awarded during the year as compared

with 107 awarded during the preceding year. Although this shows a 16 percent increase in the number of contracts, the total value of the contract work was only about \$2,000,000, or approximately half the total amount awarded in 1945-1946. These figures include street improvement work performed under both private contract and public proceedings.

Excluding street improvement work, 52 contracts were awarded having an aggregate value of \$1,233,790. These figures show a 13 percent increase in the number of contracts but a 60 percent decrease in the value of the work covered as compared with the previous year.

Due to the carrying-over of several large contracts awarded during the preceding year, total expenditures on contract work in 1946-47 were over 2-1/4 times as great as in the previous year, the total amount being approximately \$3,400,000.

#### DESIGN WORK

Designing of the North Point Sewage Treatment Plant received priority in the office and substantial progress was made. Design work for the sludge treatment plant, to be located at Islais Creek, was continued by Mr. C. C. Kennedy, Consulting Engineer, under his contract with the City.

Other design work in the sewerage field consisted of further refinement of general plans for several of the major projects covered by the 1944 Bond Issue, together with a number of small projects of an emergency nature to meet particular conditions. In the Street and Highway Division several major and a number of minor projects were developed, the latter including an increased number of channelization projects and modern traffic signal installations.

#### REPORTS

The Bureau participated in the preparation of several important reports of a far reaching nature. On August 12, 1946, the City Engineer, speaking for the Department of Public Works, pre-

sented a report on the "New San Francisco Bay Crossing" before the Joint Army-Navy Board convened in San Francisco under authorization of the last Congress. Later in the year the Bureau participated in the preparation of a joint report of the Department of Public Works and City Planning Commission entitled, "Study of Traffic Distribution Facilities for Second Bay Crossing." In the spring of 1947 numerous studies and compilations were made for the Director of the Department of Public Works and were utilized by him in the development of the report on "Traffic, Transit, and Thoroughfare Improvements for San Francisco," which was submitted on March 17, 1947 by the Technical Committee of the Mayor's Administrative Transportation Planning Council.

#### STATE AID

The Bureau handled all of the details and negotiations with the State of California for State Aid in the preparation of plans and prosecution of construction work. Four new applications were submitted for planning funds and 17 additional applications for construction funds. Claims were submitted against both accounts and by June 30, 1947, a total of \$312,692.65 had been collected.

#### ORGANIZATION PLAN

The Organization Plan of the Bureau was unchanged during the year and is as shown on the accompanying organization chart. In a following section will be found an outline of the functions of each division and section as well as the names of the employees who were in charge of each at the end of the fiscal year.

#### PERSONNEL

The staff of the Bureau was increased by eight persons during the year bringing the total to 193 as of June 30, 1947. The accompanying tabulation entitled, "Personnel at Beginning and End of Fiscal Year" shows the changes which took place in the various principal divisions. The major increase was in the design staffs in the office, the additions being largely in the draftsman classi-

fications. The Survey Division was reduced by the elimination of one survey party. In addition to the 193 employees in permanent positions at the end of the year, 15 others were working on short term appointments under temporary certifications.

### TURNOVER

During the past year, as in several preceding years, personnel turnover was at a high rate due principally to resignations on the part of temporary employees who were dissatisfied with the insecurity of City employment under the limited tenure plan which was in force during the war and up to June 30, 1947. Although the staff showed a net increase of only eight persons during the year, a total of 77 requests for employee certification was made to the Civil Service Commission, the difference of 69 representing the number of replacements and transfers. In addition, it was necessary to submit 52 employment requests for temporary positions during the year.

### PERSONNEL AT BEGINNING AND END OF FISCAL YEAR

| <u>DIVISION AND GRADE</u>                              | <u>July 1, 1946</u> | <u>June 30, 1947</u> |
|--------------------------------------------------------|---------------------|----------------------|
| <u>Engineering Design and Administrative Divisions</u> |                     |                      |
| City Engineer                                          | 1                   | 1                    |
| Assistant City Engineer                                | 1                   | 1                    |
| Senior Engineer                                        | 1                   | 1                    |
| Engineer                                               | 8                   | 8                    |
| Assistant Engineer                                     | 36                  | 33                   |
| Junior Engineer                                        | 2                   | 6                    |
| Electrical Engineering Inspector                       | 3                   | 1                    |
| Inspector Public Works Construction                    | 2                   | 2                    |
| Senior Draftsman                                       | 17                  | 20                   |
| Draftsman                                              | 16                  | 25                   |
| Junior Draftsman                                       | 4                   | 5                    |
| Cartographer                                           | 1                   | 1                    |
| Total                                                  | 92                  | 104                  |
| <u>Construction Division</u>                           |                     |                      |
| Engineer                                               | 1                   | 1                    |
| Assistant Engineer                                     | 5                   | 7                    |
| Electrical Engineering Inspector                       |                     | 1                    |
| Junior Engineer                                        | 19                  | 16                   |
| Engineering Chemist                                    | 1                   | 1                    |
| Inspector Public Works Construction                    |                     | 1                    |
| Total                                                  | 26                  | 27                   |

|                                           | <u>July 1, 1946</u> | <u>June 30, 1947</u> |
|-------------------------------------------|---------------------|----------------------|
| <u>Survey Division (Field and Office)</u> |                     |                      |
| Engineer                                  | 1                   | 1                    |
| Assistant Engineer                        | 2                   | 1                    |
| Chief of Party                            | 5                   | 4                    |
| Junior Engineer                           | 10                  | 8                    |
| Surveyor's Field Assistant                | 8                   | 8                    |
| Senior Draftsman                          | <u>1</u>            | <u>1</u>             |
| Total                                     | 27                  | 23                   |
| <u>Clerical Staff</u>                     |                     |                      |
| Clerks                                    | 5                   | 4                    |
| Stenographers and Typists                 | <u>12</u>           | <u>12</u>            |
| Total                                     | 17                  | 16                   |
| <u>Plant Operation Force</u>              |                     |                      |
| Sewage Treatment Plant                    | 17                  | 16                   |
| Pumping Stations                          | <u>6</u>            | <u>7</u>             |
| Total                                     | 23                  | 23                   |
| GRAND TOTAL                               | 185                 | 193                  |

TYPE OF APPOINTMENT

The breakdown of the permanent personnel in engineering classifications, according to Civil Service and limited tenure appointments, was as follows:

| <u>Appointments</u> | <u>July 1, 1946</u> | <u>June 30, 1947</u> |
|---------------------|---------------------|----------------------|
| Civil Service       | 96                  | 116                  |
| Limited Tenure      | <u>49</u>           | <u>38</u>            |
| Total               | 145                 | 154                  |

The increase in permanent Civil Service appointments was the result of examinations given by Civil Service Commission during the last few months.

RETURN FROM MILITARY SERVICE

During the year, the following permanent employees returned to their positions after release from the military or maritime services:

| <u>Name</u>          | <u>Service</u> | <u>Date of Return</u> |
|----------------------|----------------|-----------------------|
| Lawrence J. Archer   | Navy           | Aug. 8, 1946          |
| Benjamin Benas       | Army           | Mar. 8, 1947          |
| Clifford J. Geertz   | Army           | Sept. 16, 1946        |
| Charles S. Hiden     | Army           | Aug. 29, 1946         |
| Nicholas G. Korneeff | Maritime       | Dec. 16, 1946         |
| George E. Westlund   | Army           | Nov. 15, 1946         |

PERSONNEL LOSSES

The Bureau lost the valued services of the following employees during the year:

| <u>Name</u>         | <u>Classification</u> | <u>Length of City Service</u> |
|---------------------|-----------------------|-------------------------------|
| Through retirement: |                       |                               |
| William F. Kaiser   | Surveyor's Assistant  | 29 years                      |
| Through death:      |                       |                               |
| Ervin H. Danenhower | Draftsman             | 14 years                      |
| John Oller          | Junior Engineer       | 27 years                      |
| Harry R. Trevor     | Assistant Engineer    | 5 years                       |
| Edward J. Titlow    | Assistant Engineer    | 24 years                      |
| Elbin J. Vicain     | Junior Engineer       | 1 year                        |

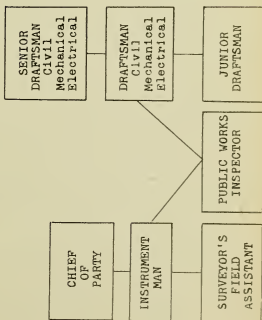
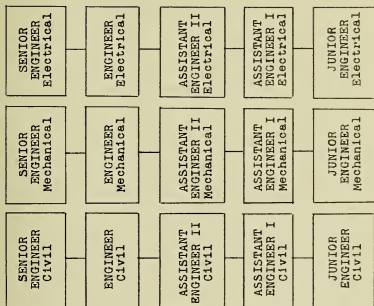
REVISION OF ENGINEERING CLASSIFICATIONS

At the recommendation of the Director of Public Works, the Civil Service Commission in the Fall of 1946 undertook a thorough study of the classifications in the Engineering Service with a view to authorizing modifications which would tend to improve the service. On October 16, 1946, the Civil Service Commission appointed a committee consisting of the Director of Public Works, City Engineer, Manager of Utilities, and the General Manager of the Water Department, to confer with the Civil Service Staff.

The revised plan adopted by the Commission in the Spring of 1947, divided the Engineering Service into two classes designated "Technical" and "Professional." The Technical classes include draftsmen, surveyors, and public works inspectors. The Professional group consists of five engineering classes in each of the three major fields of Civil, Mechanical, and Electrical Engineering. A college degree or State Registration as an Engineer was established as a pre-requisite for entrance into any of the professional classes. An accompanying chart shows the various positions in the Engineering Service, as made effective July 1, 1947.

The purpose of the classification revision was to make City Service more attractive as a career to college trained engineers and at the same time to bring about a strengthening of the engineering staff, particularly in the upper brackets through the introduction of thoroughly trained men capable of a wide variety of assignments and competent to advance to the highest positions in the Bureau.



DIVISION F - ENGINEERING SERVICETECHNICAL CLASSESPROFESSIONAL CLASSES

FUNCTIONS OF DIVISIONS AND SECTIONS

The following outline covers the principal functions of each of the divisions and sections of the Bureau as now organized, thereby expanding the brief summary previously presented under the heading "Functions of the Bureau."

DIVISION OF STREETS AND HIGHWAYS - S. P. Duckel, Asst. City Engineer

Is responsible for engineering work connected with the improvement, construction, and maintenance of City streets.

Plans the improvement, construction, and maintenance of State Highways within the City in cooperation with the State Division of Highways.

Plans the installation of traffic control devices, including traffic striping, and street and traffic signs in cooperation with the Police Department.

Street Improvement Section - C. H. Stern, Engineer

Performs engineering work for all types of street improvements and maintenance with exception of traffic engineering, main sewer installations, and major thoroughfare construction.

Plan and Record Unit - H. L. Reinfeld, Asst. Engr.

Prepares line and grade diagrams for all street and sewer work performed under private contract and assessment proceedings.

Maintains records of completed work showing types of curbs and pavements, location, and type of roadway drainage structures, and location of main and side sewers.

Supplies location of existing side sewers on all applications for building permits.

Assessment and Permit Unit - L. C. Whaley, Asst. Engr.

Prepares all permits for original street improvements performed under private contract.

Institutes all proceedings for street improvements under assessment districts and determines amount of assessment against property benefited.

Prepares plans for all street narrowing projects and street maintenance work.

Prepares permits on applications for spur tracks.

Sidewalk and Complaint Unit - E. E. Jordan, Asst. Engr.

Investigates condition of sidewalks, streets, sidewalk and street occupancies and obstructions, and notifies parties responsible to make the necessary repairs or adjustments.

Makes recommendations on applications for permits for street excavations and inspects replacement of pavements.

Investigates and makes recommendations on applications for various types of permits.

Highway Section

-

M. D. Johnson, Asst. Engr.

Is responsible for engineering designs for improvement and construction of major thoroughfares and highways.

Designs channelized intersections and roadways in cooperation with the Traffic Engineering and Safety Section.

Confers with the right-of-way agents of the Director of Property on the acquisition of land for highways.

Confers with the Bureau of Building Inspection to prevent building on property required for future highways.

Traffic Engineering and Safety Section

-

G. W. Purser, Engineer

Supervises traffic striping, installation of signs of all types, bus stops, and safety zones for street car loadings.

Makes recommendations as to type and location of channelization structures.

Prepares reports and recommendations to the Police Department, which by provisions of the City Charter has power to regulate traffic, particularly as to the location and use of traffic control devices.

Conducts traffic and pedestrian counts and surveys.

Prescribes temporary routings for traffic during the construction of major street and sewer projects.

Maintains records of traffic accidents reported by the police so as to determine the locations most in need of traffic control.

Reports damages to City property caused by traffic accidents so the City can claim reimbursement from responsible parties.

Specifications and Estimates Section

-

L. DeCew, Asst. Engr.

Coordinates the collection and preparation of plans and specifications for the construction, improvement, and maintenance of streets and highways, including the construction of traffic channelization projects.

Investigates and reports on claims filed against the Department of Public Works involving personal injury and property damage and assists the City Attorney's office in the preparation of the defense.

Special Assignments Section

-

C. V. Patterson, Asst. Engr.

Assigns requests for reports, information, and service in the Bureau and acts as expeditor.

Prepares project statements for submission to the State Division of Highways and keeps a record of the funds allocated to each project.

Maintains a record of right of way purchases for all projects to be constructed by the Bureau.

DIVISION OF DESIGN- R. H. Owens, Senior Engineer

Is responsible for design and preparation of plans and specifications for extensions and improvements of the City's sewers, sewage disposal plants and auxiliary water supply system and for structural, electrical and mechanical features of projects originating in other Divisions.

Supervises the operation and maintenance of eight sewage pumping stations.

Occasionally furnishes engineering services in the sanitary, structural, electrical, and mechanical fields to other City departments.

Structural Section- L. J. Archer, Asst. Engr.V. B. Christensen, Asst. Engr.,

in charge during military leave of L. J. Archer

Prepares structural plans for all major structures such as reinforced concrete sewers, tunnels, bridges, retaining walls and sewage treatment plants which are involved in projects designed by the Bureau.

Keeps records of surface and ground water conditions in all areas subject to sliding and subsidence and makes studies and plans for their stabilization.

Reviews annual maintenance inspection reports on (about 195 ) City-owned structures under the jurisdiction of the Department of Public Works, and makes recommendations for necessary repairs.

Sewer Section- R. F. Lauenstein, Engineer

Prepares plans for the extensions, replacements and betterments of the City's sewer system.

Investigates and reports on all matters affecting the operation and maintenance of the system.

Keeps records of all completed projects.

Checks plans of new subdivisions as to sewer layouts.

Furnishes information to the public, other City departments and contractors as to size of present and future sewers.

Sewage Disposal Section- Marvin Anaya, Engineer

Makes studies as to most advantageous location of necessary plants.

Prepares plans for new sewage disposal plants and enlargement of existing facilities.

Mechanical Section- J. Sanders, Asst. Engr.

Prepares plans and specifications for mechanical installations and betterment of equipment at sewage treatment plants and sewage pumping stations.

Prepares plans and specifications for special equipment or mechanical work for other bureaus of the Department of Public Works or other departments of the City government.

Electrical Section

-

Ivan Sandberg, Asst. Engr.

Prepares plans, specifications and cost estimates of electrical work in connection with the construction of streets, boulevards, bridges, tunnels, viaducts, traffic signals, safety and warning lights, sewage pumping stations and sewage treatment plants.

Assists in the field inspection of electrical equipment on the contracts for which plans were prepared.

Supervises the sewage pumping stations.

Conducts tests on the electrical equipment at the sewage treatment plant and sewage pumping stations.

Auxiliary Water Supply System Section - W. N. Buckley, Asst. Engr.

Prepares plans and specifications for extensions, alterations, and repairs to units of the system including pipe lines, control valves and hydrants, pumping stations, fire-boats, reservoirs, pressure tanks and cisterns.

Investigates and recommends changes in the low pressure hydrant system.

Keeps records of installation and alterations of all underground structures of the system, and furnishes information to public and private utilities and interested parties.

Underground Structure Section

-

M. J. Callaghan, Asst. Engr.

Maintains records of underground structures and foundation conditions.

Prepares maps in connection with contemplated improvements showing location and size of all existing underground facilities such as vaults, pipes, conduits, etc.

Reviews plans of new subdivisions as to proposed location of underground facilities.

Handles applications to Office of Production Administration and its successor the Housing Expediter for "Authority to Begin Construction."

Administrative Section

-

G. Galli, Engineer

Programs the work of the Division of Design.

Coordinates the activities of the various sections, particularly in the assembly of plans, specifications and estimates required for construction contracts.

Revises standard specifications as required.

Supervises the stenographic and mimeographing service and maintains reference files for the benefit of the entire bureau.

Estimating Section

-

C. Geertz, Asst. Engr.

Prepares cost estimates for sewers, sewage disposal and miscellaneous projects including preliminary estimates, contract estimates and estimates of field changes.

Analyzes actual construction costs to serve as basis of future estimates.

CONSTRUCTION DIVISION

C. H. Taylor, Engineer

Inspection Units - various assistant engineers and junior engineers

Inspects all City-paid construction contracts continuously throughout the construction, submitting daily and weekly progress reports; submits monthly estimates of the work done to serve as a basis of progress payments to Contractors.

Inspects street improvement contracts at such times as critical operations are in progress.

Makes a complete inspection annually of all structures such as bridges, stairways, retaining walls, and sea walls which are under the jurisdiction of the Department of Public Works in order to ascertain their condition and to serve as a basis of necessary repairs and maintenance.

Testing Laboratory Unit

P. P. Bernard, Engineering Chemist

Operates the laboratory and testing unit which takes samples and makes the necessary chemical and physical tests of all important materials going into construction. Testing work is performed for other bureaus of the department and for other departments of the City including the Purchasing Department, Public Utilities Commission, Park Department, and the Fire Department.

Sanitary Fill Unit

W. T. Lundy, Junior Engr.

Inspects the work at the sanitary fill for garbage disposal to insure compliance with cover requirements, maintenance of drainage and sanitary requirements; submits daily and monthly reports as to amount of garbage handled by number of cars, trucks, and tonnage, and the cost of operations.

RICHMOND-SUNSET TREATMENT PLANT

B. Benas, Supt.

K. Fraschina, Asst. Supt. & Chemist,  
Acting Supt. during military leave of B. Benas

Operates and maintains the plant. Makes suggestions and recommendations for changes to increase the efficiency of operations.

ADMINISTRATIVE SECTION

L. Glick, Engineer

Handles all routine administrative work of the Bureau such as preparation of budget, personnel procedure, preparation of work orders for departmental services, securing of necessary materials and supplies, checking of time reports and maintenance of files, mailing facilities and like services.

Prepares and issues certificates for progress payments on contracts supervised by the Bureau, checks daily construction reports, prepares final completion and acceptance letters and issues requests for payment of inspection and survey fees.

Performs certain work with reference to all contracts awarded by the Department, such as publication of orders pertaining

to contracts and public proceedings, preparation of contract forms, checking of contractor's bonds and insurance policies and preparing completion notices and acceptance recommendations regarding street work to the Board of Supervisors.

SURVEYS AND MAPPING SECTION

-

I. Flamm, Engineer

Makes surveys for all divisions of the Bureau, for other bureaus of the Department of Public Works, and frequently for other City departments to obtain data for various engineering projects, establishment of grades, construction work, final examination of street work, rechecking and establishment of monument lines, precise levels, bench marks, subsidence surveys, lot surveys, subdivisions and other required work.

Performs surveys for private parties, usually when a boundary line is in dispute.

Writes or checks all deeds incidental to street or property acquisitions or sales.

Investigates, reports upon, and prepares resolutions relating to street openings or closings and sidewalk widths.

Checks and reports upon all proposed subdivisions as to streets, grades, and tie in of property with City monument lines.

Maintains official City maps and data as to streets and grades and supplies information on request.

Checks protests against the action of the City Planning Commission to see if the protestants are within the district which may protest and if they control the requisite area required by law.

Due to rigid enforcement of the traffic law relative to parking on grades, answers many requests from the public and Traffic Fines Bureau as to the per cent grade of various streets.

PROGRAMS AND BUDGETS SECTION

-

A. V. Bowhay, Engineer

Prepares preliminary material for annual budgets and develops programs for several years in advance for consideration by the Director.

Handles all procedures in applying for postwar financial aid from the State and prepares claims for reimbursement for plans and specifications and for construction.

Prepares material for reports on major improvement programs.

Makes economic studies of various alternate plans for major street improvements.

Acts in an advisory capacity as to how traffic and transit problems will be affected by projected improvements.

RESEARCH AND REPORTS SECTION

-

M. H. Levy, Engineer

Supervises the photographing, filing and indexing of negatives and prints taken of projects before and during construction, and after completion.

Prepares reports as required by City ordinance on "Obligation as to Use of Streets under Franchises and Permits."

Keeps statistics, compiles reports and answers inquiries as to the disposal of garbage and refuse by the sanitary fill method.

Correlates, prepares and distributes the annual report of the Department of Public Works.

Prepares special reports as requested.

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#### CURRENT CONTRACT DATA

The following tabulations list all of the construction contracts which were under supervision of the Bureau during the fiscal year 1946-47. The tabulation is subdivided into five sections according to type of construction. For each contract which was current during the year there is indicated the name of the contractor, dates of award and completion, actual or estimated contract cost, percentage of work completed and the amount of money expended during the fiscal year, the latter figure being approximate in the case of those contracts not entirely completed at the end of the year. The tabulation also indicates the particular fund against which the cost of the work was charged. In the case of contracts finally completed during the year, the figure shown for "Contract Amount" is the actual total amount paid the contractor. In the case of those contracts which were still under way at the end of the fiscal year, the amount shown for that item is the estimated value of the contract based on bid prices and estimated quantities.



SUMMARY

| Table                                          | Type of Construction                  | Contracts Awarded<br>1946 - 1947 |                 | Amount expended<br>During fiscal year<br>1946 - 1947 |
|------------------------------------------------|---------------------------------------|----------------------------------|-----------------|------------------------------------------------------|
|                                                |                                       | Number                           | Aggregate value |                                                      |
| A                                              | Major Thoroughfares                   | 3                                | \$ 101,877.00   | \$ 406,756.15                                        |
| B-1                                            | Streets - Private Contracts           | 46                               | 612,233.00      | 815,483.00                                           |
| B-2                                            | Streets - Assessment Proceedings      | 26                               | 196,794.69      | 158,164.98                                           |
| B-3                                            | Streets - Public Contracts, City Pay  | 8                                | 75,200.56       | 44,200.57                                            |
| C                                              | Traffic Signals and Channelization    | 8                                | 188,223.72      | 106,422.32                                           |
| D-1                                            | Sewers - Pipe, Vitrified and Concrete | 12                               | 297,670.75      | 278,019.24                                           |
| D-2                                            | Sewers - Concrete (Monolithic)        | 3                                | 350,367.22      | 1,026,526.80                                         |
| E                                              | Miscellaneous                         | 18                               | 220,451.24      | 577,227.49                                           |
| TOTALS Awarded and Expended during Fiscal Year |                                       | 124                              | \$2,042,818.18  | \$3,412,800.55                                       |

Explanation of abbreviations for "fund" as used in following tables:

General - General Fund City and County  
 Spec. Rd. - Special Road Improvement Fund  
 2d 1/4¢ - Special Gas Tax Street Improvement Fund  
 1st 1/4¢ - One-quarter Cent Gas Tax for expenditures on State Highways within the City  
 Assessment - Assessed to property benefiting under the Street Improvement Ordinance of 1934  
 Pd. Prop. Owners - Costs borne by Property Owners under Private Contract  
 1944 Sever Bonds - Bond Issue voted by citizens on November 7, 1944 - \$12,000,000

## CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                                                                                                           | Awarded | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended<br>1946-1947 | %   | Fund                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------|----------------|--------------------|---------------------------------|-----|---------------------|
| <u>A - MAJOR THOROUGHFARES</u>                                                                                                                                                                     |         |                   |                |                    |                                 |     |                     |
| Persia Ave. Extn. bet. Mission St. &<br>Ocean Ave. (Sewers, Curb, Paving)<br>Eaton & Smith                                                                                                         | 5/15/46 | 12/2/46           | 100            | \$11,421.15        | \$11,421.15                     | 100 | 2d 1/4d             |
| Clipper St. Extn. bet. Douglass St.<br>& Portola Dr. (Sewers, Curb, Paving)<br>Eaton & Smith                                                                                                       | 5/29/46 |                   | 99             | 182,232.75         | 180,400.00                      | 97  | Spec. Rd.           |
| Guerrero St. bet. 14th & Army Sts.<br>(Sidewalk narrowing, channelize,<br>repave)<br>Eaton & Smith                                                                                                 | 6/28/46 |                   | 98             | 206,221.00         | 202,100.00                      | 98  | Spec. Rd.           |
| Sunset Blvd. bet. So. Drive in Golden<br>Gate Park & Sloat Blvd. (Emulsified<br>seal coat - 2 applications)<br>Chas. L. Harney, Inc.                                                               | 9/13/46 | 11/21/46          | 100            | 12,835.00          | 12,835.00                       | 100 | 2d 1/4d             |
| Alemany Blvd. Sec. "A" bet. Mission St.<br>& 34th Ely. (Curbs, Paving, center<br>island)<br>Chas. L. Harney, Inc.                                                                                  | 5/28/47 |                   | 0              | 83,717.00          |                                 | 0   | 1st 1/4d            |
| Sunset Blvd. from Sloat Blvd. Sly.<br>(Emulsified seal coat - 2 applica-<br>tions)<br>Morgan Constr. Co.                                                                                           | 6/4/47  |                   | 0              | 5,325.00           |                                 | 0   | 2d 1/4d             |
| Totals awarded and expended during fiscal year                                                                                                                                                     |         |                   |                | \$101,877.00       | \$406,756.15                    |     |                     |
| <u>B-1 - STREETS - Private Contracts</u>                                                                                                                                                           |         |                   |                |                    |                                 |     |                     |
| Wavona St. bet. 42d & 43d Aves.<br>Crossings, 42d & 43d Aves. (sewers)<br>42d Ave. bet. Vicente & Wavona Sts.<br>43d Ave. bet. Vicente & Wavona Sts.<br>(sewers, curbs, paving)<br>Chas. L. Harney | 2/13/46 | 8/8/46            | 100            | \$29,300.00        | \$17,500.00                     | 60  | Pd. Prop.<br>owners |

| Description & Contractor                                                                                                                                                                                                                                  | Awarded | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended<br>1946-1947 | Fund                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------|----------------|--------------------|---------------------------------|---------------------|
| <u>B-1 - STREETS - Private Contracts (Cont'd)</u>                                                                                                                                                                                                         |         |                   |                |                    |                                 |                     |
| Sawyer St., Sunnydale Ave. 617.10' Sly. (sewers, curbs, paving)<br>Fay Improvement Co.                                                                                                                                                                    | 3/13/46 | 7/30/46           | 100            | \$11,000.00        | \$ 4,400.00                     | 40 Pd. Prop. owners |
| Lakeshore Park Subdivision #3<br>(Sewage Pumping Station)<br>Eaton & Smith                                                                                                                                                                                | 3/15/46 |                   | 74             | 35,000.00          | 25,900.00                       | 74 "                |
| Sunrise Way, 103' east of Sawyer St. to Wly. termination, crossing Sawyer St. & intersecting Hahn St. Hahn St. from Sunrise Way 34' Nly. Sawyer St. from Velasco Ave. Nly. to 617.1' So. of Sunnydale Ave. (sewers, curbs, paving)<br>Fay Improvement Co. | 3/20/46 | 7/30/46           | 100            | 19,000.00          | 13,900.00                       | 73 "                |
| Fredson Court, Huron Ave. to Sly. Termination (sewers, curbs, paving)<br>Fay Improvement Co.                                                                                                                                                              | 3/20/46 | 10/9/46           | 100            | 5,500.00           | 4,400.00                        | 80 "                |
| *41st & 42d Aves. (portions) bet. Rivera & Santiago Sts. Rivera St. (portions) bet. 41st & 42d Aves. (sewers, curbs, paving)<br>C. L. Harney                                                                                                              | 3/22/46 | 9/27/46           | 100            | 5,950.00           | 3,870.00                        | 65 "                |
| *44th Ave. (portions) bet. Vicente & Wawona Sts. (sewers, curbs, paving)<br>E. J. Treacy                                                                                                                                                                  | 3/22/46 | 10/2/46           | 100            | 10,000.00          | 4,000.00                        | 40 "                |
| *Girard St. bet. Ordway & Ward Sts. (sewers, curbs, paving)<br>E. J. Treacy                                                                                                                                                                               | 3/22/46 | 8/9/46            | 100            | 5,400.00           | 2,160.00                        | 40 "                |

## CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                                                         | Awarded | Completed | Contract    | Amount      | Expenditures | Fund             |
|--------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------|-------------|-------------|--------------|------------------|
|                                                                                                                                                  | Date    | %         | Amount      | 1946-1947   |              |                  |
| <b>B-1 - STREETS - Private Contracts (Cont'd)</b>                                                                                                |         |           |             |             |              |                  |
| Velasco Ave. bet. Castillo & Calgary Sts. Intersections of Castillo Pueblo, Sawyer & Calgary Sts. (sewers, curbs, paving)<br>Pay Improvement Co. | 4/1/46  | 100       | \$12,800.00 | \$ 6,400.00 | 50           | Pd. prop. owners |
| Pueblo St. from Velasco Ave. Sly. to County Line (sewers, curbs, paving)<br>Pay Improvement Co.                                                  | 4/12/46 | 100       | 11,150.00   | 6,700.00    | 60           | "                |
| Anzavista Subdivision (Sts. within) (sewers, curbs, paving and lighting system) C. L. Harney                                                     | 5/1/46  | 97        | 216,000.00  | 155,500.00  | 72           | "                |
| Carrizal St. from Parque Dr. Sly. to existing pavement. Intersection of Parque Dr. (sewers, curbs, paving)<br>Pay Improvement Co.                | 5/1/46  | 100       | 4,747.00    | 4,270.00    | 90           | "                |
| Castillo St. bet. Velasco Ave. & Walbridge St. (sewers, curbs, paving)<br>Pay Improvement Co.                                                    | 5/3/46  | 100       | 11,000.00   | 4,400.00    | 40           | "                |
| Calgary St. between Velasco Ave. & Walbridge St. (sewers, curbs, paving)<br>Pay Improvement Co.                                                  | 5/3/46  | 100       | 11,000.00   | 5,500.00    | 50           | "                |
| Grant St. bet. Alameda & Division Sts. (sewer) Pay Improvement Co.                                                                               | 5/3/46  | 100       | 9,450.00    | 9,450.00    | 100          | "                |
| Grant St. bet. Alameda & Division Sts. (sewer) Pay Improvement Co.                                                                               | 5/10/46 | 60        | 11,000.00   | 6,600.00    | 60           | "                |

## CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                                                         | Awarded | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended<br>1946-1947 | %   | Fund             |
|--------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------|----------------|--------------------|---------------------------------|-----|------------------|
| B-1 - STREETS - Private Contracts (Cont'd)                                                                                                       |         |                   |                |                    |                                 |     |                  |
| *43d Ave. (portions) bet. Ulloa & Vicente Sts. (sewers, curbs, paving)<br>C. L. Harney                                                           | 5/10/46 | 8/9/46            | 100            | \$13,200.00        | \$ 6,600.00                     | 50  | Pd. prop. owners |
| Rivera St. bet. 40th & 41st Aves. (sewers, curbs, paving)<br>C. L. Harney                                                                        | 5/10/46 |                   | 50             | 5,500.00           | 2,750.00                        | 50  | "                |
| Valerton Court (sewers, curbs, paving)<br>Eaton & Smith                                                                                          | 5/10/46 | 9/12/46           | 100            | 5,807.50           | 5,230.00                        | 90  | "                |
| *41st & 42d Aves. (portions) bet. Pacheco & Quintara Sts. Pacheco St. bet. 41st & 42d Aves (portions)<br>(sewers, curbs, paving)<br>C. L. Harney | 5/24/46 |                   | 60             | 26,000.00          | 15,600.00                       | 60  | "                |
| 40th Ave. (W½) bet. 93' & 118' So. of Noriega St. (sewers, curbs, paving)<br>C. L. Harney                                                        | 6/7/46  | 2/26/47           | 100            | 325.00             | 325.00                          | 100 | "                |
| Miraloma Park (certain Sts. within) (sewers, curbs, paving, lighting system)<br>C. L. Harney                                                     | 6/26/46 |                   | 50             | 125,000.00         | 62,500.00                       | 50  | "                |
| Ellsworth St., bet. 225' & 275' So. of Crescent Ave. (sewers, curbs, paving)<br>E. J. Treacy                                                     | 6/28/46 | 11/27/46          | 100            | 1,135.00           | 1,135.00                        | 100 | "                |
| Apparel City (streets within) (sewers, curbs, paving, lighting)<br>C. L. Harney                                                                  | 6/28/46 | 2/21/47           | 100            | 147,000.00         | 147,000.00                      | 100 | "                |

## CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                          | Awarded Date | Completed Date | Completed % | Contract Amount | Amount Expended 1946-1947 | %   | Fund             |
|-------------------------------------------------------------------------------------------------------------------|--------------|----------------|-------------|-----------------|---------------------------|-----|------------------|
| B-1 - STREETS - Private Contracts (Cont'd)                                                                        |              |                |             |                 |                           |     |                  |
| 45th Ave. bet. Ulloa & Vicente Sts. (curbs & paving)<br>C. L. Harney                                              | 7/10/46      | 10/2/46        | 100         | \$14,200.00     | \$14,200.00               | 100 | Pd. prop. owners |
| *39th Ave. (portions) bet. Vicente & Wavona Sts. (sewers, curbs, paving)<br>C. L. Harney                          | 7/12/46      |                | 60          | 12,500.00       | 7,500.00                  | 60  | "                |
| Kempton Ave. from Alemany Blvd. to 300 <sup>th</sup> Nly. (sewers, curbs, paving)<br>Pay Improvement Co.          | 7/12/46      | 10/27/47       | 100         | 6,100.00        | 6,100.00                  | 100 | "                |
| Carrizal St. (Ely 1/2) bet. Parque Dr. (Nly) produced, & Velasco Ave. (curbs, temporary pavement)<br>Gilbert Plov | 7/16/46      | 3/18/47        | 100         | 380.00          | 380.00                    | 100 | "                |
| Pelton St. (St) bet. Madison St. & 95 <sup>th</sup> Ely (curb, paving)<br>E. J. Treacy                            | 7/24/46      | 11/29/46       | 100         | 1,000.00        | 1,000.00                  | 100 | "                |
| *41st Ave. (portions) bet. Vicente & Wavona Sts. (sewers, curbs, paving)<br>C. L. Harney                          | 7/26/46      |                | 35          | 9,850.00        | 3,440.00                  | 35  | "                |
| Teresita Blvd. (E $\frac{1}{2}$ ) from Evelyn Way Nly (sewer in Ely. sidewalk)<br>T. G. Meyer                     | 8/9/46       | 11/1/46        | 100         | 1,100.00        | 1,100.00                  | 100 | "                |
| *Wavona St. (portions) bet. 39th & 41st Aves. bet. 42d & 43d Aves. (sewers, curbs, paving)<br>C. L. Harney        | 8/16/46      |                | 45          | 16,000.00       | 7,200.00                  | 45  | "                |

## CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                                                                                   | Awarded | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended |     | Fund                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------|----------------|--------------------|--------------------|-----|---------------------|
|                                                                                                                                                                            |         |                   |                |                    | 1946-1947          | \$  |                     |
| B-1 - STREETS - Private Contracts (Cont'd)                                                                                                                                 |         |                   |                |                    |                    |     |                     |
| 40th Ave. bet. Vicente & Wavona<br>Sts. (sewers, curbs, paving)<br>C. L. Harney                                                                                            | 8/16/46 |                   | 45             | \$16,000.00        | \$ 7,200.00        | 45  | pd. prop.<br>owners |
| Wavona St. bet. 38th & 39th Aves.<br>(sewers, curbs, paving)<br>C. L. Harney                                                                                               | 8/16/46 |                   | 60             | 6,100.00           | 3,660.00           | 60  | "                   |
| Velasco Ave. bet. Santos & Castil-<br>lo Sts. (sewers, curbs, paving)<br>Pay Improvement Co.                                                                               | 8/16/46 | 3/17/47           | 100            | 5,000.00           | 5,000.00           | 100 | "                   |
| Rhode Island St. bet. 15th & 16th<br>Sts. (curbs, paving)<br>Pay Improvement Co.                                                                                           | 8/28/46 | 2/16/47           | 100            | 9,400.00           | 9,400.00           | 100 | "                   |
| Laurel Heights Subdivision<br>(streets within) (sewers, curbs,<br>paving, lighting system)<br>C. L. Harney                                                                 | 8/30/46 |                   | 40             | 216,000.00         | 86,400.00          | 40  | "                   |
| Graystone Terrace from Iron Alley<br>170' westerly (curbs, paving)<br>Pay Improvement Co.                                                                                  | 9/13/46 |                   | 50             | 3,200.00           | 1,600.00           | 50  | "                   |
| Thrift St. bet. Capitol & Plymouth<br>Aves. No. side bet. 275' & 725'<br>east of Capitol Ave. So. side bet.<br>125' & 300' east of Capitol Ave.<br>(curbs)<br>C. L. Harney | 9/20/46 | 10/30/46          | 100            | 700.00             | 700.00             | 100 | "                   |
| 39th Ave. bet. Wavona & Yorba Sts.<br>(sewers, curbs, paving)<br>C. L. Harney                                                                                              | 10/9/46 |                   | 35             | 15,200.00          | 5,300.00           | 35  | "                   |

## CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                                                                                                                                     | Awarded  | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended<br>1946-1947 | \$  | Fund                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------|----------------|--------------------|---------------------------------|-----|---------------------|
| B-1 - STREETS - Private Contracts (Cont'd)                                                                                                                                                                                   |          |                   |                |                    |                                 |     |                     |
| Sloat Blvd. bet. 37th & 39th Aves.<br>Intersection of 39th Ave. 39th Ave.<br>bet. Sloat Blvd. & Yorba St.<br>Yorba St. bet. 39th & 40th Aves.<br>crossing of 39th Ave. intersection<br>of 40th Ave. (sewers)<br>C. L. Harney | 9/25/46  | 2/28/47           | 100            | \$ 4,000.00        | \$ 4,000.00                     | 100 | Pd. prop.<br>owners |
| *DeHaro St. (portions) bet. 15th<br>& 16th Sts. (curbs, paving)<br>Lowrie Paving Co.                                                                                                                                         | 10/11/46 | 2/25/46           | 100            | 6,750.00           | 6,750.00                        | 100 | "                   |
| Peabody St. from Sunnydale Ave.<br>to Sly. termination (sewers, curbs,<br>paving) Fay Improvement Co.                                                                                                                        | 10/30/46 | 6/28/47           | 100            | 9,000.00           | 9,000.00                        | 100 | "                   |
| *Pacheco St. (portions) bet. 40th<br>& 41st Aves. (sewers, curbs, paving)<br>C. L. Harney                                                                                                                                    | 11/1/46  |                   | 60             | 3,800.00           | 2,280.00                        | 60  | "                   |
| *39th & 40th Aves. (portions) bet.<br>Quintara & Rivera Sts. (sewers,<br>curbs, paving) C. L. Harney                                                                                                                         | 11/1/46  |                   | 45             | 20,100.00          | 9,050.00                        | 45  | "                   |
| Industrial St. (N/s) bet. Oakdale<br>Ave. & 157.12, west of Loomis St.<br>(sewers, curbs, paving)<br>C. L. Harney                                                                                                            | 11/8/46  | 4/11/47           | 100            | 15,000.00          | 15,000.00                       | 100 | "                   |
| 42d Ave. bet. Wavona St. & Sloat<br>Blvd. (sewers, curbs, paving)<br>C. L. Harney                                                                                                                                            | 11/29/46 |                   | 60             | 11,200.00          | 6,700.00                        | 60  | "                   |



## CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                                                                      | Awarded  | Completed<br>Date | %   | Contract<br>Amount | Amount<br>Expended<br>1946-1947 | %   | Fund                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------|-----|--------------------|---------------------------------|-----|---------------------|
| <b>B-1 - STREETS - Private Contracts (Cont'd)</b>                                                                                                             |          |                   |     |                    |                                 |     |                     |
| Graystone Terrace bet. Corbett Ave.<br>& Copper Alley, (Sly. $\frac{1}{2}$ ) bet.<br>**Copper & Iron Alleys (Sewers,<br>curbs, paving)<br>Fay Improvement Co. | 12/4/46  |                   | 25  | \$ 6,500.00        | \$ 1,620.00                     | 25  | Pd. prop.<br>owners |
| *Girard St. (portions) bet. Man-<br>sell & Ordway Sts. (curbs, paving)<br>E. J. Treacy                                                                        | 12/20/46 | 6/27/47           | 100 | 4,600.00           | 4,600.00                        | 100 | "                   |
| *Dublin St. (portions) bet. Persia<br>& Russia Aves. (sewers, curbs, pav-<br>ing)<br>Eaton & Smith                                                            | 12/27/46 |                   | 50  | 12,100.00          | 6,050.00                        | 50  | "                   |
| Visitation Ave. from center line<br>Delta St. Ely. 120' (sewers in So.<br>sidewalk) Patrick R. Kelly                                                          | 2/7/47   | 2/20/47           | 100 | 665.00             | 665.00                          | 100 | "                   |
| Quesada Ave. from Quint St. Ely.<br>475' (curbs, paving)<br>Fay Improvement Co.                                                                               | 2/19/47  |                   | 50  | 9,250.00           | 4,625.00                        | 50  | "                   |
| El Camino Del Mar east of 25th<br>Ave. (sewer) M. J. Lynch                                                                                                    | 2/21/47  | 3/5/47            | 100 | 1,800.00           | 1,800.00                        | 100 | "                   |
| 38th Ave. bet. Wawona & Yorba Sts.<br>(sewers, curbs, paving)<br>C. L. Harney                                                                                 | 2/26/47  |                   | 45  | 12,300.00          | 5,550.00                        | 45  | "                   |
| 39th Ave. bet. Yorba St. & Sloat<br>Bivd. (curbs, paving)<br>C. L. Harney                                                                                     | 2/26/47  |                   | 45  | 4,250.00           | 1,900.00                        | 45  | "                   |

## CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                           | Awarded | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended<br>1946-1947 | Fund                      |
|----------------------------------------------------------------------------------------------------|---------|-------------------|----------------|--------------------|---------------------------------|---------------------------|
| B-1 - STREETS - Private Contracts (Cont'd)                                                         |         |                   |                |                    |                                 |                           |
| 40th Ave. bet. Wawona & Yorba<br>Sts. (sewers, curbs, paving)<br>C. L. Harney,                     | 2/26/47 |                   | 45             | \$11,850.00        | \$ 5,350.00                     | 45<br>Pd. prop.<br>owners |
| Van Ness Ave. (east side) No. of<br>North Point St. (curbs, paving)<br>C. L. Harney,               | 2/28/47 | 3/24/47           | 100            | 3,623.00           | \$ 3,623.00                     | 100<br>"                  |
| *Yorba St. (portions) bet. 38th<br>& 40th Aves. (sewers, curbs, pav-<br>ing)<br>C. L. Harney,      | 3/7/47  |                   | 35             | 10,600.00          | 3,700.00                        | 35<br>"                   |
| Naglee Ave. between Huron Ave. &<br>Alemany Blvd. (curbs, paving)<br>C. L. Harney,                 | 3/12/47 |                   | 20             | 6,400.00           | 1,280.00                        | 20<br>"                   |
| *Thrift St. (portions) bet. Ply-<br>mouth & Capitol Aves. (curbs,<br>paving)<br>C. L. Harney, Inc. | 3/19/47 | 4/30/47           | 100            | 10,400.00          | 10,400.00                       | 100<br>"                  |
| Hubbell St. bet. 7th & 16th Sts.<br>(curbs, paving)<br>Fay Improvement Co.                         | 3/21/47 |                   | 80             | 14,765.00          | 11,800.00                       | 80<br>"                   |
| Ramsell St. bet. Alemany Blvd. &<br>Palmetto Ave. (grading & sewer)<br>E. J. Treacy                | 4/9/47  |                   | 25             | 3,100.00           | 750.00                          | 25<br>"                   |
| Napoleon St. bet. Evans & Jerrold<br>Aves. (curbs, paving).<br>Eaton & Smith                       | 4/25/47 |                   | 0              | 36,000.00          |                                 | 0<br>"                    |
| 41st Ave. bet. Wawona St. &<br>Sloat Blvd. (sewers, curbs, pav-<br>ing)<br>C. L. Harney, Inc.      | 4/30/47 |                   | 35             | 15,900.00          | 5,560.00                        | 35<br>"                   |

## CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                                            | Awarded | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended<br>1946-1947 | Fund                      |
|-------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------|----------------|--------------------|---------------------------------|---------------------------|
| B-1 STREETS - Private Contracts (Cont'd)                                                                                            |         |                   |                |                    |                                 |                           |
| Pacheco St. from Ortega Way, 260'<br>Sly. (sewer) Henry Doeiger                                                                     | 5/9/47  |                   | 20             | \$ 1,300.00        | \$ 260.00                       | 20<br>Pd. prop.<br>owners |
| O'Farrell St. (N½) Wly. 156' from<br>a point 180' Wly. from Stockton St.<br>(Relocate auxiliary water supply<br>main) Eaton & Smith | 5/9/47  |                   | 0              | 3,500.00           | 0                               | "                         |
| Point Lobos Ave. So. of Cliff<br>House (sewer) Wm. Huber                                                                            | 5/7/47  | 6/6/47            | 100            | 500.00             | 500.00                          | 100<br>"                  |
| *40th, 41st & 42d Aves. bet. San-<br>tiago & Taraval Sts. (sewers, curbs,<br>paving) C. L. Harney, Inc.                             | 5/21/47 |                   | 40             | 39,500.00          | 15,800.00                       | 40<br>"                   |
| Army & Clipper Sts. (sewer con-<br>nection) Eaton & Smith                                                                           | 5/23/47 | 6/11/47           | 100            | 500.00             | 500.00                          | 100<br>"                  |
| Block 2134-B bet. 68' & 178' Wly.<br>from Quintara St. (construct man-<br>hole, remove sewer from easement)<br>Henry Doeiger        | 6/11/47 |                   | 0              | 250.00             | 0                               | "                         |
| Totals awarded and expended during fiscal year                                                                                      |         |                   |                | \$ 612,233.00      | \$815,483.00                    |                           |

\*Remaining portion of street improved under assessment proceedings.

\*\*Nly.  $\frac{1}{2}$  improved under Public Contract - City pay.

## CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                                                                                                      | Awarded | Completed<br>Date | Completed<br>% | Contract<br>Amount         | Amount<br>Expended<br>1946-1947 | Fund                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------|----------------|----------------------------|---------------------------------|----------------------|
| B-2 STREETS - Assessment Proceedings                                                                                                                                                          |         |                   |                |                            |                                 |                      |
| Pacheco St. bet. 42d & 43d Aves. crossing Pacheco St., 42d Ave. (sewers, curbs, paving) Chas. L. Harney, Inc.                                                                                 | 3/15/46 | 9/30/46           | 100            | \$ 7,513.20<br>(2,200.00+) | \$6,013.20                      | 80 Asmt.<br>Spec.Rd. |
| *44th Ave. (portions) Vicente to Wavona St. (sewers, curbs, paving)<br>E. J. Treacy                                                                                                           | 3/22/46 | 10/2/46           | 100            | 2,150.00<br>(1,100.00+)    | 860.00                          | 40 "                 |
| *Girard St. (portions) bet. Ordway & Ward Sts. (sewers, curbs, paving)<br>E. J. Treacy                                                                                                        | 3/22/46 | 8/9/46            | 100            | 1,729.80<br>( 600.00+)     | 691.80                          | 40 "                 |
| *41st Ave. (portions) bet. Rivera & Santiago Sts. 42d Ave. (portions) bet. Rivera & Santiago Sts. Rivera St. (portions) bet. 41st & 42d Sts. (sewers, curbs, paving)<br>Chas. L. Harney, Inc. | 3/22/46 | 9/27/46           | 100            | 5,404.30<br>(2,800.00+)    | 3,514.30                        | 65 "                 |
| Rivera St. bet. 38th & 40th Aves. Crossings 38th, 39th & 40th Aves. (sewers, curb, paving)<br>Chas. L. Harney, Inc.                                                                           | 5/10/46 |                   | 45             | 21,678.80<br>(8,000.00+)   | 7,600.00                        | 35 "                 |
| *39th Ave. (portions) bet. Rivera & Santiago Sts. (sewers, curbs, paving)<br>Chas. L. Harney, Inc.                                                                                            | 5/10/46 |                   | 45             | 2,802.70<br>( 800.00+)     | 840.00                          | 30 "                 |
| 43d Ave. (portions) bet. Ulloa & Vicente Sts. (sewers, curbs, paving)<br>Chas. L. Harney, Inc.                                                                                                | 5/10/46 | 8/9/46            | 100            | 1,993.50<br>( 800.00+)     | 996.75                          | 50 "                 |
| 41st Ave., Crossings Pacheco & Rivera Sts. (sewers, curbs, paving)<br>Chas. L. Harney, Inc.                                                                                                   | 5/10/46 |                   | 55             | 6,151.00                   | 3,380.00                        | 55 Asmt.             |

## CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                                                                                                          | Awarded | Completed | Contract                 | Amount    | Expenditures | Fund                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------|--------------------------|-----------|--------------|---------------------|
|                                                                                                                                                                                                   | Date    | %         | Amount                   | 1946-1947 | %            |                     |
| B-2 STREETS - Assessment Proceedings (Cont'd)                                                                                                                                                     |         |           |                          |           |              |                     |
| *41st Ave. (portions) bet. Pacheco & Quintara Sts. 42d Ave. (portions) bet. Pacheco & Quintara Sts. Pacheco St. (portions) bet. 41st & 42d Aves. (sewers, curbs, paving)<br>Chas. L. Harney, Inc. | 5/24/46 | 60        | 5,044.19<br>(2,800.00+)  | 3,020.00  | 60           | Assmt.<br>Spec. Rd. |
| 40th Ave. bet. Quintara & Rivera Sts. (sewer)<br>Chas. L. Harney, Inc.                                                                                                                            | 6/19/46 | 100       | 4,782.00<br>(1,500.00+)  | 4,782.00  | 100          | "                   |
| *39th Ave. (portions) bet. Vicente & Wawona Sts. (sewers, curbs, paving)<br>Chas. L. Harney, Inc.                                                                                                 | 7/12/46 | 60        | 1,435.00<br>(650.00+)    | 860.00    | 60           | "                   |
| Pennsylvania Ave. from 20th St. Sly. 306' (sewers, curbs, paving)<br>Eaton & Smith                                                                                                                | 7/26/46 | 100       | 10,918.80<br>(300.00+)   | 10,918.80 | 100          | "                   |
| *41st Ave. (portions) bet. Vicente & Wawona Sts. (sewers, curbs, paving)<br>Chas. L. Harney, Inc.                                                                                                 | 7/26/46 | 35        | 3,408.00<br>(200.00+)    | 1,200.00  | 35           | "                   |
| *Wawona St. (portions) bet. 39th & 41st Aves. (portions) bet. 42d & 43d Aves. (sewers, curbs, paving)<br>Chas. L. Harney, Inc.                                                                    | 8/16/46 | 45        | 2,700.00<br>(900.00+)    | 1,215.00  | 45           | "                   |
| Wawona St. crossings of 39th & 40th Aves. (sewers, curbs, paving)<br>Chas. L. Harney, Inc.                                                                                                        | 8/16/46 | 40        | 6,529.00<br>(350.00+)    | 2,600.00  | 40           | "                   |
| Wawona St. bet. 43d & 44th Aves. Crossings of 43d & 44th Aves. (sewers, curbs, paving)<br>Chas. L. Harney, Inc.                                                                                   | 9/20/46 | 45        | 11,991.64<br>(3,730.00+) | 5,400.00  | 45           | "                   |

## CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                                                    | Awarded Date | Completed % | Contract Amount           | Amount Expended 1946-1947 | %   | Fund               |
|---------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------|---------------------------|---------------------------|-----|--------------------|
| B-2 STREETS - Assessment Proceedings (Cont'd)                                                                                               |              |             |                           |                           |     |                    |
| 35th Ave. bet. Pacheco & Quintara Sts. (sewers, curbs, paving)<br>Pay Improvement Co.                                                       | 9/20/46      | 100         | \$9,824.20<br>(5,950.00+) | \$9,824.20                | 100 | Assmt.<br>Spec. Rd |
| *DeHaro St (W $\frac{1}{2}$ ) bet. 16th St. & 200' Nly. (curbs, paving)<br>Lowrie Paving Co.                                                | 10/11/46     | 100         | 2,250.00                  | 2,250.00                  | 100 | Assmt.             |
| DeHaro St. bet. 15th & Alameda Sts. (curbs, paving) Chas. L. Harney, Inc.                                                                   | 10/11/46     | 100         | 8,190.00                  | 8,190.00                  | 100 | Assmt.             |
| *Pacheco St. bet. 40th Ave. & 82.5' west (curbs, paving)<br>Chas. L. Harney, Inc.                                                           | 11/1/46      | 60          | 1,773.75<br>(1,100.00+)   | 1,065.00                  | 60  | Assmt.<br>Spec. Rd |
| Wavona St. bet. 41st & 42d Aves. Crossings 41st & 42d Aves. (sewers, curbs, paving) Chas. L. Harney, Inc.                                   | 11/1/46      | 45          | 13,556.50<br>(1,700.00+)  | 6,100.00                  | 45  | "                  |
| *39th Ave. (portions) bet. Quintara & Rivera Sts. 40th Ave. (portions) bet. Quintara & Rivera Sts. (curbs, paving)<br>Chas. L. Harney, Inc. | 11/1/46      | 45          | 8,652.50                  | 3,900.00                  | 45  | Assmt.             |
| *Dublin St. (portions) bet. Persia & Russia Aves. (curbs, paving)<br>Eaton & Smith                                                          | 12/27/46     | 50          | 5,477.50<br>(2,100.00+)   | 2,740.00                  | 50  | Assmt.<br>Spec. Rd |
| *Girard St. (portions) bet. Mansell & Ordway Sts. (curbs, paving)<br>E. J. Treacy                                                           | 12/20/46     | 100         | 2,742.88<br>(1,100.00+)   | 2,742.88                  | 100 | "                  |
| Lakeview Ave. bet. Ashton & Jules Aves., incl. intersection of Jules Ave. (sewers, curb, paving)<br>E. J. Treacy                            | 1/10/47      | 35          | 7,893.50                  | 2,760.00                  | 35  | Assmt.             |

## Bureau of Engineering

CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                                                                                                                                                                                                                                                                                                                     | Awarded | Completed<br>Date | %   | Contract<br>Amount                          | Amount<br>Expended<br>1946-1947 | Fund                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------|-----|---------------------------------------------|---------------------------------|-------------------------------------|
| B-2 - STREETS - Assessment Proceedings (Cont'd)                                                                                                                                                                                                                                                                                                                                                              |         |                   |     |                                             |                                 |                                     |
| St. Joseph's Ave. bet. Turk & O'Farrell<br>Sts. incl. intersection of St. Joseph's<br>Ave. with Eddy, Ellis & O'Farrell Sts.<br>& O'Farrell St. bet. St. Joseph's Ave. &<br>Broderick St. (sewers, curbs, paving,<br>lighting)<br>Chas. L. Harney, Inc.                                                                                                                                                      | 2/26/47 | 5/26/47           | 100 | 33,803.45<br>{ 4,732.00+ }<br>{ 8,613.00+ } | 33,803.45                       | 100<br>Assmt.<br>Spec. Rd<br>2d 1/4 |
| Bella Vista Way bet. Sequoia Way &<br>Avoca Alley. Avoca Alley bet. Bella<br>Vista Way & Myra Way. Myra Way bet.<br>Omar Way & Avoca Alley. Omar Way<br>from Myra Way Ely. to existing pave-<br>ment; also intersections of Bella<br>Vista Way & Dorcas Way, Bella Vista<br>Way & Rockdale Dr., Myra Way & Omar<br>Way, and Myra Way & 31st St. (sewers,<br>curb, paving, lighting)<br>Chas. L. Harney, Inc. | 2/21/47 |                   | 50  | 22,850.60<br>(13,200.00+)                   | 11,425.00                       | 50<br>Assmt.<br>Spec. Rd.           |
| *39th Ave. (W 1/2) bet. Sloat Blvd. &<br>91 <sup>st</sup> Wly. (curbs, paving)<br>Chas. L. Harney, Inc.                                                                                                                                                                                                                                                                                                      | 2/26/47 |                   | 45  | ( 968.60<br>600.00+ )                       | 435.00                          | 45<br>"                             |
| *38th Ave. (portions) bet. Wavona<br>& Yorba Sts. (curbs, paving)<br>Chas. L. Harney, Inc.                                                                                                                                                                                                                                                                                                                   | 2/26/47 |                   | 45  | 598.00                                      | 270.00                          | 45<br>Assmt.                        |
| *40th Ave. (portions) bet. Wavona<br>& Yorba Sts. (curbs, paving)<br>Chas. L. Harney, Inc.                                                                                                                                                                                                                                                                                                                   | 2/26/47 |                   | 45  | 3,096.65<br>(1,000.00+)                     | 1,390.00                        | 45<br>Assmt.<br>Spec. Rd.           |
| Yorba St. bet. 37th & 38th Aves. &<br>Intersections of Yorba St. at 38th,<br>39th & 40th Aves. (sewers, curb,<br>paving)<br>Eaton & Smith                                                                                                                                                                                                                                                                    | 3/7/47  |                   | 35  | 12,313.20<br>(1,200.00+)                    |                                 | "                                   |

## CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                                     | Awarded | Completed<br>Date | Completed<br>% | Contract<br>Amount       | Amount<br>Expended<br>1946-1947 | %   | Fund              |
|------------------------------------------------------------------------------------------------------------------------------|---------|-------------------|----------------|--------------------------|---------------------------------|-----|-------------------|
| B-2 - STREETS - Assessment Proceedings (Cont'd)                                                                              |         |                   |                |                          |                                 |     |                   |
| *Yorba St. (portions) bet. 38th & 40th<br>Aves. (curbs, paving)<br>Chas. L. Harney, Inc.                                     | 3/7/47  |                   | 35             | \$1,372.00<br>( 100.00+) | \$ 480.00                       | 35  | Assmt<br>Spec.Rd. |
| *Thrift St. (portions) bet. Capitol<br>& Plymouth Aves. (curbs, paving)<br>Chas. L. Harney, Inc.                             | 3/19/47 | 4/30/47           | 100            | 6,246.00<br>(1,400.00+)  | 6,246.00                        | 100 | "                 |
| Girard St. Crossings of Mansell St.<br>& Ordway Sts. E. J. Treacy<br>(curbs, paving)                                         | 5/7/47  | 6/25/47           | 100            | 3,101.60<br>( 700.00+)   | 3,101.60                        | 100 | "                 |
| Riversa St. bet. 37th & 38th Aves.<br>(sewers, curbs, paving)<br>Pay Improvement Co.                                         | 5/7/47  |                   | 0              | 6,981.32<br>( 700.00+)   | 0                               |     | "                 |
| *40th, 41st, 42d Aves. (portions)<br>bet. Santiago & Taraval Sts. (curbs,<br>paving)<br>Chas. Harney, Inc.                   | 5/21/47 |                   | 40             | 8,120.00<br>(1,000.00+)  | 3,250.00                        | 40  | "                 |
| Totals awarded and expended during fiscal year                                                                               |         |                   |                | \$196,794.69             | \$158,164.98                    |     |                   |
| *Remaining portion of street improved under Private Contract.<br>*Amount paid by City - balance paid by property owners.     |         |                   |                |                          |                                 |     |                   |
| B-3 - STREETS - Public Contract - City Pay                                                                                   |         |                   |                |                          |                                 |     |                   |
| Velasco Ave. (N <sup>1</sup> / <sub>2</sub> ) bet. Castillo St.<br>& 40' Ely. (sewers, curbs, paving)<br>Pay Improvement Co. | 5/13/46 | 3/17/47           | 100            | \$ 3,779.75              | \$ 3,779.75                     | 100 | Spec.Rd.          |
| Bush St. bet. Kearny & Sansome Sts.<br>(removal of Street Railway tracks<br>& pavement)<br>Eaton & Smith                     | 7/3/46  | 9/13/46           | 100            | 14,058.00                | 14,058.00                       | 100 | "                 |



## Bureau of Engineering

CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                                                  | Awarded | Date    | Completed | Contract Amount | Amount Expended |     | Fund      |
|-------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|-----------|-----------------|-----------------|-----|-----------|
|                                                                                                                                           |         |         |           |                 | 1946-1947       | %   |           |
| B-3 - STREETS - Public Contract - City Pay (Cont'd)                                                                                       |         |         |           |                 |                 |     |           |
| Velasco Ave. (N $\frac{1}{2}$ ) bet. Santos & Castillo Sts. (curbs, paving)<br>Pay Improvement Co.                                        | 8/16/46 | 3/17/47 | 100       | \$ 350.00       | \$ 350.00       | 100 | Spec. Rd. |
| Bonview St. bet. Cortland & Eugenia Aves. (widen and reconstruct)<br>E. J. Treacy                                                         | 9/27/46 | 2/5/47  | 100       | 3,890.14        | 3,890.14        | 100 | "         |
| Graystone Terrace (Nly. $\frac{1}{2}$ ) bet. Copper Alley & Iron Alley (curbs, paving)<br>Pay Improvement Co.                             | 12/4/46 |         | 45        | 2,560.44        | 1,150.00        | 45  | "         |
| 36th Ave. (west side) bet. Noriega & Quintara Sts. 37th Ave. (east side) bet. Moraga & Noriega Sts. (sidewalk & loam)<br>Patrick R. Kelly | 1/10/46 | 3/28/47 | 100       | 5,972.00        | 5,972.00        | 100 | Gen. Fund |
| El Camino Del Mar from Pt. Lobos Ave. to 400' Nly. (reconstruction)<br>C. L. Harney                                                       | 3/5/47  | 5/23/47 | 100       | 6,320.68        | 6,320.68        | 100 | Spec. Rd. |
| Sacramento St. bet. Van Ness Ave. & Gough St. (remove cable car tracks & repave)<br>Pay Improvement Co.                                   | 3/19/47 |         | 49        | 17,723.30       | 8,680.00        | 49  | "         |
| Presidio Ave. bet. Post & California Sts. (widen & pave)<br>C. L. Harney                                                                  | 6/18/47 |         | 0         | 24,326.00       |                 | 0   | 2d 1/4r   |
| Totals awarded and expended during fiscal year                                                                                            |         |         |           | \$75,200.56     | \$44,200.57     |     |           |

CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                                 | Awarded  | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended<br>1946-1947 | %   | Fund                                     |
|--------------------------------------------------------------------------------------------------------------------------|----------|-------------------|----------------|--------------------|---------------------------------|-----|------------------------------------------|
| C - TRAFFIC SIGNALS & CHANNELIZATION                                                                                     |          |                   |                |                    |                                 |     |                                          |
| California St. at Grant Ave. &<br>Kearny St. (Cable car traffic sig-<br>nals)<br>R. Flatland                             | 12/7/45  | 10/4/46           | 100            | \$ 5,960.70        | 3,860.70                        | 65  | Spec.Rd.                                 |
| 19th Ave. bet. Vicente St. &<br>Junipero Serra Blvd. (3-light<br>traffic signal system)<br>R. Flatland                   | 5/31/46  | 3/31/47           | 100            | 15,400.96          | 15,400.96                       | 100 | 1st <del>1st</del><br>2nd <del>2nd</del> |
| Lombard St. & Richardson Ave.<br>bet. Lyon St. & Van Ness Ave.<br>(3-light traffic signal system)<br>Abbett Electric Co. | 5/31/46  | 5/19/47           | 100            | 26,898.59          | 26,898.59                       | 100 | 1st <del>1st</del><br>2nd <del>2nd</del> |
| Third & Berry Sts. (Channeliza-<br>tion)<br>R. Flatland                                                                  | 8/2/46   | 11/26/46          | 100            | 3,660.00           | 3,660.00                        | 100 | Spec.Rd.                                 |
| Third & 16th Sts. (3-light<br>traffic signals)<br>R. Flatland                                                            | 8/28/46  | 2/14/47           | 100            | 3,274.00           | 3,274.00                        | 100 | Spec.Rd.                                 |
| Pine & Hyde Sts. (Overhead traffic<br>warning sign, cable car)<br>R. Flatland                                            | 8/23/46  | 11/8/46           | 100            | 2,537.00           | 2,537.00                        | 100 | Spec.Rd.                                 |
| Portola Drive bet. Evelyn Way<br>& Twin Peaks Blvd. (Channeli-<br>zation)<br>R. Flatland                                 | 11/22/46 | 2/10/47           | 100            | 10,126.07          | 10,126.07                       | 100 | 2d <del>1st</del>                        |

CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                                                                                                                      | Awarded | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended<br>1946-1947 | Fund           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------|----------------|--------------------|---------------------------------|----------------|
| C - TRAFFIC SIGNALS & CHANNELIZATION - (Cont'd)                                                                                                                                                               |         |                   |                |                    |                                 |                |
| Bay Shore Blvd. bet. Third St. &<br>County Line. (3-light traffic<br>signals & channelization)<br>R. Flatland                                                                                                 | 1/3/47  |                   | 60             | \$66,541.90        | \$39,920.00                     | 60 1st 1/4¢    |
| Third St. bet. Custer Ave. & Bay<br>Shore Blvd. (center island and<br>channelization)<br>R. Flatland                                                                                                          | 4/11/47 |                   | 0              | 93,882.25          |                                 | 0 2d 1/4¢      |
| Intersection of Bernal Ave., San<br>Jose Ave., Monterey Blvd., Diamond<br>St. (channelization)<br>Chas. L. Harney, Inc.                                                                                       | 5/14/47 |                   | 22             | 3,383.75           | 745.00                          | 22 2d 1/4¢     |
| Lombard St. westerly from Van Ness<br>Ave., Richardson Ave., NWly. from<br>Lombard St., Anzavista subdivision,<br>Apparel City Subdivision, Laurel<br>Hill Subdivision (erect street<br>signs)<br>M. J. Lynch | 6/4/47  |                   | 0              | 4,818.75           |                                 | 0 Gen.<br>Fund |
| Totals awarded and expended during fiscal year                                                                                                                                                                |         |                   |                | \$188,223.72       | \$106,422.32                    |                |

## CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                                  | Awarded  | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended<br>1946-1947 | Fund               |
|---------------------------------------------------------------------------------------------------------------------------|----------|-------------------|----------------|--------------------|---------------------------------|--------------------|
| D-1 - SEWERS - PIPE - Vitrified & Concrete                                                                                |          |                   |                |                    |                                 |                    |
| Folsom St. bet. 12th & 18th Sts.<br>(12", 15", 18", 24" V.C.P.)<br>Lowrie Paving Co.                                      | 3/27/46  | 8/27/46           | 100            | \$56,272.35        | \$22,508.35                     | 40 General         |
| Pine St. bet. Van Ness Ave. &<br>Divisadero St. (8", 12", 15",<br>18" V.C.P.) M. J. Lynch                                 | 4/3/46   | 10/29/46          | 100            | 107,769.07         | 85,100.00                       | 79 "               |
| Sutter St. bet. Presidio Ave.<br>& Baker St. (12", 15" V.C.P.)<br>P. J. Kelly                                             | 6/12/46  | 9/25/46           | 100            | 21,305.40          | 21,305.40                       | 100 "              |
| Francisco Heights, Blocks 1083<br>& 1131 (8" V.C.P.)<br>P. J. Kelly                                                       | 6/26/46  | 9/27/46           | 100            | 5,407.50           | 5,407.50                        | 100 "              |
| St. Charles Ave. bet. Niantic &<br>Stanley Sts. (12", 18", 21" V.C.P.<br>24", 27" concrete pipe)<br>Chas. L. Harney, Inc. | 6/26/46  | 11/14/46          | 100            | 20,705.44          | 20,705.44                       | 100 Bonds<br>1944  |
| Alpine Terrace bet. 14th St. &<br>Duboce Ave. (8" V.C.P.)<br>Murphy & McNair                                              | 7/3/46   | 9/17/46           | 100            | 8,754.00           | 8,754.00                        | 100 Sewer<br>bonds |
| Laguna St. in North Point &<br>Webster Sts. bet. Laguna &<br>Beach Sts. (21" V.C.P.)<br>Murphy & McNair                   | 7/17/46  | 11/26/46          | 100            | 31,806.80          | 31,806.80                       | 100 General        |
| Ellis St. bet. Broderick St. &<br>St. Joseph's Ave. (18" V.C.P.)<br>Eaton & Smith                                         | 11/13/46 | 12/17/46          | 100            | 1,801.60           | 1,801.60                        | 100 "              |

## CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                                                                    | Awarded  | Date    | Completed<br>% | Contract<br>Amount | Amount<br>Expended<br>1946-1947 | %   | Fund          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------|----------------|--------------------|---------------------------------|-----|---------------|
| <u>D-1 SEWERS - PIPE - Vitrified &amp; Concrete (Cont'd)</u>                                                                                                |          |         |                |                    |                                 |     |               |
| Lincoln Park from Palace of the<br>Legion of Honor to 34th Ave. &<br>Clement St. with branch to Park<br>convenience station (12" V.C.P.)<br>Murphy & McNair | 11/20/46 | 4/11/47 | 100            | \$24,823.75        | \$24,823.75                     | 100 | General       |
| Clipper St. bet. Douglass &<br>Diamond Sts. (15" V.C.P.)<br>M. J. Lynch                                                                                     | 12/18/46 | 3/17/47 | 100            | 12,865.40          | 12,865.40                       | 100 | Bonds<br>1944 |
| Glen Park Playground (60" con-<br>crete pipe) M. J. Treacy                                                                                                  | 2/26/47  |         | 94             | 17,260.00          | 16,200.00                       | 94  | "             |
| Vicente St. storm water outfall<br>(6'6" & 2-5'0" concrete pipe)<br>Healy-Tibblitts                                                                         | 3/19/47  |         | 14             | 159,865.00         | 22,400.00                       | 14  | "             |
| Fairmount School, relocate sewer<br>(8" V.C.P.) M. J. Lynch                                                                                                 | 4/9/47   | 5/20/47 | 100            | 1,636.00           | 1,636.00                        | 100 | General       |
| Stanley St. sanitary sewer in<br>19th Ave. opp. Denslowe Drive<br>(18" C.I.P.) Martin Murphy                                                                | 5/14/47  |         | 70             | 3,540.00           | 2,480.00                        | 70  | "             |
| 24th St. Ely. from Illinois St.<br>(18" Transite pipe)<br>Eaton & Smith                                                                                     | 5/14/47  |         | 5              | 4,490.00           | 225.00                          | 5   | Bonds<br>1944 |
| 46th Ave. & Lincoln Way to the Rich-<br>mond Sunset Sewage Tr. Plant (30" con-<br>crete pipe) Eaton & Smith                                                 | 6/4/47   |         | 0              | 27,863.20          |                                 | 0   | "             |
| Fitzgerald Ave.-Griffith St. Ely.<br>(15", 18" V.C.P.) Eaton & Smith                                                                                        | 6/6/47   |         | 0              | 2,965.00           |                                 | 0   | "             |
| Totals awarded and expended during fiscal year                                                                                                              |          |         |                | \$297,670.75       | \$278,019.24                    |     |               |

## CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                                         | Awarded  | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended<br>1946-1947 | %   | Fund        |
|----------------------------------------------------------------------------------------------------------------------------------|----------|-------------------|----------------|--------------------|---------------------------------|-----|-------------|
| D-2 SEWERS - CONCRETE (Monolithic)                                                                                               |          |                   |                |                    |                                 |     |             |
| Lincoln Way at Great Highway (Out-fall storm drain) (3-compartment, 6'x6')                                                       | 3/23/45  | 7/10/46           | 100            | \$175,263.75       | \$138,500.00                    | 79  | General     |
| Healy Tibbitts Co.                                                                                                               |          |                   |                |                    |                                 |     |             |
| Napoleon St. bet. Jerrold Ave. & Selby St. (5'0" dia. 2'6"x3'9")                                                                 | 9/19/45  | 7/16/46           | 100            | 130,649.58         | 3,920.00                        | 3   | Bonds 1944  |
| Healy Tibbitts Co.                                                                                                               |          |                   |                |                    |                                 |     |             |
| Ingliside Sewer Sec. "B" Urbano Dr. bet. Victoria St. & Ocean Ave. (5'9" dia. 2'6"x3'9")                                         | 10/26/45 | 6/17/46           | 100            | 128,534.35         | 5,140.00                        | 4   | General     |
| M. J. Lynch                                                                                                                      |          |                   |                |                    |                                 |     |             |
| Upper Army Sewer System, Sec. "A" Church St. bet. 25th & 27th Sts. (6'6", 5'9" dia.) 2'3" x 3'0"                                 | 2/6/46   | 12/12/46          | 100            | 114,907.45         | 87,320.00                       | 76  | "           |
| M & K Corp.                                                                                                                      |          |                   |                |                    |                                 |     |             |
| Scott St. Sewer System, 17th, Church, 14th, Sanchez, Steiner Sts. bet. Treat Ave. & Waller Sts. 9'0"x7'3", 5'9", 6'0", 7'0" dia. | 2/20/46  |                   | 92             | 796,989.55         | 629,600.00                      | 79  | "           |
| M & K Corp.                                                                                                                      |          |                   |                |                    |                                 |     |             |
| Hampshire St. bet. 25th & Army Sts. (2'6" x 3'9")                                                                                | 3/13/46  | 8/15/46           | 100            | 37,399.30          | 23,799.30                       | 64  | Bonds 1944  |
| Martin Murphy                                                                                                                    |          |                   |                |                    |                                 |     |             |
| Army St. bet. San Bruno & Potrero Aves. (8'6" x 7'0")                                                                            | 5/15/46  | 1/31/47           | 100            | 87,204.50          | 87,204.50                       | 100 | General     |
| Healy Tibbitts Co.                                                                                                               |          |                   |                |                    |                                 |     |             |
| Baker St. Storm Water Outfall (6'0" x 5'6")                                                                                      | 9/13/46  | 4/15/47           | 100            | 45,443.00          | 45,443.00                       | 100 | "           |
| Duncanson-Harrelson                                                                                                              |          |                   |                |                    |                                 |     |             |
| Caselli Ave. & Douglass St. bet. Eagle & 18th Sts. (2'6"x3'9", 2'0"x3'0")                                                        | 4/11/47  |                   | 9              | 62,222.22          | 5,600.00                        | 9   | Sever bonds |
| M. J. Lynch                                                                                                                      |          |                   |                |                    |                                 |     |             |

CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                    | Awarded | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended<br>1946-1947 | Fund               |
|-------------------------------------------------------------------------------------------------------------|---------|-------------------|----------------|--------------------|---------------------------------|--------------------|
| D-2 SEWERS - CONCRETE (Monolithic) (Cont'd)                                                                 |         |                   |                |                    |                                 |                    |
| Alemaney Sewer Sec. "G" & Marin St.<br>Sewer outfall at Islais Creek                                        |         |                   |                |                    |                                 |                    |
| 3-compartment 10'0"x7'6", 10'0"x7'10"<br>Healy Tibbitts Co.                                                 | 5/7/47  |                   | 0              | \$242,702.00       | —                               | Sewer<br>bonds     |
| Totals awarded and expended during fiscal year                                                              |         |                   |                | \$350,367.22       | \$1,026,526.80                  |                    |
| E - MISCELLANEOUS                                                                                           |         |                   |                |                    |                                 |                    |
| Richmond-Sunset Sewage Treatment<br>Plant (additions to grit-grease<br>tanks)                               | 6/15/45 | 2/15/47           | 100            | \$ 8,719.20        | \$ 8,719.20                     | 100 General        |
| Pitzgerald Ave. Sewage Pumping Sta.<br>(install pump) E. J. Treacy                                          | 3/20/46 |                   | 96             | 2,498.90           | 2,400.00                        | 96 "               |
| No. Point Sludge Treatment Plant<br>(test borings, shear, friction<br>consolidation tests)<br>J. N. Pitcher | 5/29/46 | 10/9/46           | 100            | 8,343.85           | 8,343.85                        | 100 Sever<br>bonds |
| Marina Sewage Pumping Station<br>(lining for steel tanks)<br>C. R. Reichel                                  | 6/12/46 | 7/9/46            | 100            | 656.50             | 656.50                          | 100 General        |
| Richmond-Sunset Sewage Treatment<br>Plant (enlargement)<br>Clinton Constr. Co.<br>& Anderson & Rowe         | 6/26/46 |                   | 59             | 800,197.00         | 472,100.00                      | 59 Sever<br>bonds  |
| No. Point Sludge Treatment Plant<br>Site near Islais Creek (test<br>piles)<br>Healy-Tibbitts Co.            | 7/3/46  | 7/25/46           | 100            | 6,850.00           | 6,850.00                        | 100 "              |

## CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                     | Awarded Date | Completed % | Contract Amount | Amount Expended 1946-1947 | %   | Fund        |
|----------------------------------------------------------------------------------------------|--------------|-------------|-----------------|---------------------------|-----|-------------|
| <u>E - MISCELLANEOUS - (Cont'd)</u>                                                          |              |             |                 |                           |     |             |
| <u>Palace Legion of Honor (test borings for cistern)</u><br>J. N. Pitcher                    | 8/23/46      | 100         | \$ 280.00       | \$ 280.00                 | 100 | Sever bonds |
| <u>Miguel St. (retaining wall at #51)</u><br>Eaton & Smith                                   | 9/13/46      | 100         | 2,250.00        | 2,250.00                  | 100 | Spec. Rd.   |
| <u>Lake Merced Sewer Sec. "C" (test borings for lake trestle)</u><br>Raymond Concr. Pile Co. | 9/13/46      | 100         | 2,592.40        | 2,592.40                  | 100 | Sever bonds |
| <u>Evans Ave. Bridge at Army St. (cast iron specials)</u><br>Empire Foundry                  | 10/23/46     | 100         | 6,053.40        | 6,053.40                  | 100 | 2d 1/4¢     |
| <u>4th St. Bridge at Channel (repair south fender)</u> M. B. McGowan                         | 10/30/46     | 100         | 999.00          | 999.00                    | 100 | "           |
| <u>Lake Merced Sewer, Sec. "D" (test borings Ft. Funston tunnel)</u><br>J. C. Grattan        | 11/27/46     | 100         | 4,353.70        | 4,353.70                  | 100 | Sever bonds |
| <u>Palace Legion of Honor (fire cistern)</u> Eaton & Smith                                   | 12/18/46     | 92          | 13,000.00       | 11,960.00                 | 92  | General     |
| <u>North Point Sewage Treatment Plant (test borings)</u><br>J. N. Pitcher                    | 2/26/47      | 100         | 1,668.22        | 1,668.22                  | 100 | Sever bonds |
| <u>Bernal Ave. bet. Miguel St. &amp; St. Mary's Ave. (slope repair)</u><br>M. J. Lynch       | 2/28/47      | 98          | 16,815.75       | 16,480.00                 | 98  | Co. roads   |



## Bureau of Engineering

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## CURRENT CONTRACT DATA 1946-1947

| Description & Contractor                                                                                             | Awarded | Completed<br>Date | Completed<br>% | Contract<br>Amount | Amount<br>Expended<br>1946-1947 | %   | Fund        |
|----------------------------------------------------------------------------------------------------------------------|---------|-------------------|----------------|--------------------|---------------------------------|-----|-------------|
| <u>E - MISCELLANEOUS (Cont'd)</u>                                                                                    |         |                   |                |                    |                                 |     |             |
| <u>Pairfax Ave. &amp; Rankin St. bet. Quint St. &amp; Evans Ave. (raise auxiliary water supply line)</u> M. J. Lynch | 3/5/47  | 6/13/47           | 100            | \$ 6,470.95        | \$ 6,470.95                     | 100 | Sewer bonds |
| <u>Street signs, new type (Purchaser of Supplies)</u> Ferris Enameling Co                                            | 4/3/47  | 6/28/47           | 100            | 12,950.00          | 12,950.00                       | 100 | General     |
| <u>11st Ave. bet. Ortega &amp; Pacheco Sts. (sand removal)</u> Chas. L. Harney, Inc.                                 | 5/15/47 | 5/16/47           | 100            | 3,700.00           | 3,700.00                        | 100 | Spec. Rds.  |
| <u>Evans Ave. Bridge at Army (new reinforced concrete bridge)</u> Eaton & Smith                                      | 4/16/47 |                   | 10             | 67,500.00          | 6,750.00                        | 10  | 2d 1/4d     |
| <u>Junipero Serra Blvd. at Alemany Blvd. (-est borings, grade separation)</u> C. N. Pitcher                          | 6/24/47 |                   | 0              | 840.00             |                                 | 0   | 1st 1/4d    |
| <u>Log Cabin Ranch (nr. Redwood City) (water supply system)</u> Murphy & McNair                                      | 6/4/47  |                   |                | 42,498.00          |                                 | 0   | General     |
| <u>Third St. &amp; Fourth St. bridges over Channel St. (clean &amp; paint)</u> D. E. Burgess                         | 6/14/47 |                   | 0              | 15,113.00          |                                 | 0   | 2d 1/4d     |
| <u>Napoleon St. bet. Evans Ave. &amp; Jerrold Ave. (raise auxiliary water supply line to grade)</u> Eaton & Smith    | 6/25/47 |                   | 0              | 14,866.55          |                                 | 0   | General     |
| <u>Islais Creek Bridge (Operating Gear Repair)</u> Union Machine Co                                                  | 5/28/47 | 6/1/47            | 100            | 1,650.27           | 1,650.27                        | 100 | 2d 1/4d     |
| TOTALS Awarded and Expended during Fiscal Year                                                                       |         |                   |                | \$220,451.24       | \$577,227.49                    |     |             |

STREETS AND HIGHWAYS

No contracts for major highway construction were let during the year. Construction was deferred on two important projects estimated to cost approximately \$1,200,000 because they would cause the removal of 97 buildings and the displacement of 217 occupancies, although the funds were available, plans and specifications completed, and most of the necessary right-of-way acquired.

Nevertheless, four important street improvements were completed and a fifth placed under contract; one bridge construction job was started; and normal street and bridge maintenance work was continued.

MAJOR THOROUGHFARESGuerrero St., 14th St. to Army St.

The widening and reconstruction of Guerrero Street from 14th Street to Army Street was completed during the past fiscal year. The contract was awarded to Eaton and Smith on June 28, 1946, but actual construction did not begin until September 18, 1946. Final quantities are now being computed.

The purpose of this improvement was to provide a divided arterial consisting of four traffic lanes and two seven-foot parking lanes. Conduits and foundations for future street lighting were installed in the four-foot center island.

The project was financed from the Special Road Improvement Fund, \$206,610 being available to defray the cost of street reconstruction items. Preliminary engineering costs were paid from the 2nd 1/4% Gas Tax Fund (Streets of Major Importance) with the approval of the State Division of Highways. The Public Utility Commission provided an additional amount of \$12,230 for the estimated cost of items designed to accommodate future street lighting requirements.

The length of the project was 7,250 feet and included 18 crossings and intersections. The improvement required the narrow-

ing of sidewalks from 15 feet to 9 feet, thereby increasing the roadway from 52'6" to 64'6". The existing roadway was entirely resurfaced except for those portions in which the deteriorated condition required complete removal and reconstruction.

The reduction of the sidewalk width made necessary the removal of encroaching stairways and other privately owned obstructions. Many such encroachments built prior to 1900 had acquired adverse rights under the existing ordinances. Six encroaching structures extended more than 3 feet onto the sidewalk area, and, in conjunction with the setting back of curbs, so restricted the usable width of walk as to create an obstacle to pedestrian traffic. The Real Estate Department successfully negotiated agreements with the owners for the removal of such encroachments. The cost of this work was \$10,687, chargeable to Appropriation No. 677.980.58.

Prior to the award of contract, the utility corporations were instructed to place all conduits underground. This extensive operation was performed in advance of the street reconstruction and with a minimum of interference with the work of the general contractor. All property owners along the entire frontage were notified, both prior to and after the award of contract to remove side sewer traps, area walls, oil tanks, and other privately owned structures lying within the six-foot sidewalk strip required for roadway widening. In general, property owners promptly complied with the form notice sent them.

Guerrero Street between 14th Street and Army Street, as now widened and reconstructed, forms an important link in the City's expanding arterial system and forms a direct connection from Market Street to the proposed Army Street-San Jose Avenue improvement which is scheduled for early construction.

Clipper St. Extension between Douglass St. & Portole Drive

The contract for this improvement, awarded on May 29, 1946, was opened to traffic on June 20, 1947, although not officially com-



Clipper Street Extension  
looking east from Portola Drive



Vicente Street Outfall  
two 60" diam. concrete pipes with collars  
(see p. 74)

pleted. It affords motorists a direct connection between the area west of Twin Peaks and the Mission District, via Portola Drive, Clipper Street, and Army Street. The highway is 2,300 feet in length and provides four 12-ft. traffic lanes, two 8-ft. parking lanes and two 10-ft. sidewalks within an 84-ft. right-of-way. The parking lanes are concrete, 8 inches in thickness. The traffic lanes are paved with an 8-in. concrete base and a 2-in. asphaltic concrete wearing surface. The improvement involved 132,500 cu.yds. of excavation. The contract price was \$182,232.75.

Persia Ave. Extension between Mission St. & Ocean Ave.

The contract for this improvement was awarded May 15, 1946, and was completed December 2, 1946. The new street provides a direct connection between Persia Avenue east of Mission Street and Ocean Avenue and Alemany Boulevard west of Mission Street, thereby eliminating one 90 degree turn and one 130 degree turn. The project is 260 feet in length with a right-of-way 60 feet wide providing two 12-ft. traffic lanes, paved with a 6-in. concrete base and 2-in. asphaltic concrete wearing surface, two 8-ft. parking lanes of 8-in. concrete, and two 10-ft. sidewalks.

The contract cost was \$11,421.15.

Alemany Boulevard

Alemany Boulevard is 100 feet wide between property lines with two 10-ft. sidewalks. The existing pavement extending 3,460 feet easterly from Mission Street consists of two 20-ft. asphaltic concrete roadways separated by a 10-ft. unpaved strip. The pavement was placed in 1934 as a temporary measure to carry traffic over ground known to be subsiding. All appreciable settlement has now ceased.

A contract in the amount of \$83,717 was awarded on May 28, 1947, to construct a permanent pavement but no work was done up to June 30th. When completed the boulevard will have two 10-ft. sidewalks, two 7-ft. parking lanes, and two 31-ft. roadways separated by a 4-ft. center island.

Sunset Boulevard - seal coat

Sunset Boulevard is 240 feet wide and approximately 12,000 feet long from Golden Gate Park to Sloat Boulevard. It consists of two 30-ft. roadways separated by a planted divider 15 feet wide, two 15-ft. pedestrian paths and one 15-ft. equestrian path. The remainder of the 240-ft. width is planted with shrubs and trees.

The pavement, constructed about 15 years ago, consists of a 10-in. macadam base and a 2-1/2-in. asphaltic wearing surface. Although commercial vehicles are not permitted to use this boulevard, the wearing surface in recent years became badly cracked permitting water to enter the macadam base. To prevent the infiltration of water and re-bond the cracked wearing surface, it was decided to seal coat the entire pavement. This was accomplished by first filling all the larger cracks with emulsified asphalt and sand by maintenance crews of the Department. The seal coat was placed under a contract awarded on September 13, 1946, and consisted of two applications of emulsified asphalt followed by applications of crushed screenings, producing a mat approximately 3/4 inch in thickness. Although the seal coat has been in service only seven months, its effectiveness seems assured. The contract cost was \$12,835.

EVANS AVENUE BRIDGE

A contract was awarded on March 26, 1947, for the construction of the Evans Avenue Bridge crossing the Western Pacific Railway Company's track near Army Street. It will be a reinforced concrete structure 108 feet long and 80 feet wide. The center span will be 54 feet and the two end spans 27 feet each. It will replace an existing wood structure built many years ago and not of sufficient width to accommodate the present heavy traffic. Because of this heavy traffic it was thought unwise to detour all vehicles during construction of the new bridge. It was, therefore, designed so that one-half of the width could be constructed at a time. A portion of the old bridge, 20-ft. wide, has been left in place for

the use of traffic while the first half of the new bridge is being constructed.

The contract, amounting to \$67,500, is now 10% complete.

### BRIDGE MAINTENANCE

In addition to the fixed highway and street bridges maintained by the Department of Public Works, there are four movable span bridges. One of these, a bascule type, crosses the Islais Creek Channel at Third Street. Islais Channel extends from the Bay in a westerly direction to a point approximately 1700 feet from Third Street. It has a width of 200 feet and a water depth of 35 feet. A large amount of freight, such as lumber, hay, rice, and fish, is transported by vessels using this channel.

The three other movable bridges cross the Channel Street waterway at Third Street, Fourth Street, and Sixth Street. The Third and Fourth Street bridges are of the bascule type; that at Sixth Street is a swing span and has not been operated for several years, being open continuously to water-borne traffic. The Channel Street waterway extends from the Bay to Seventh Street and is used by a wide variety of shipping which transports lumber, hay, brick, sand, gravel, etc. A portion of the fishing fleet (purse seiners) berths between Sixth and Seventh Streets.

In October, 1946, a fender of the Fourth Street Bridge was repaired at a cost of \$999.00. On May 31 and June 1, 1947, emergency repairs were made to the operating gear on the Islais Creek Bridge at a cost of \$1,650.27.

A contract in the amount of \$15,113 has been awarded for painting the Third and Fourth Street bridges but the work has not been started.

### STREET IMPROVEMENTS FINANCED BY PROPERTY OWNERS

#### Improvement Procedure

The original improvement of streets in San Francisco is an obligation of the owners of the property benefiting by the improve-

ment. Improvements are made in accordance with local and State regulations and may be performed under private contract, public contract, or a combination of the two.

Under the private contract method, a permit is granted for the improvement when the owners of all the frontage on the street to be improved have signed with a licensed contractor for the work. If the proposed work involves only sewers or crossing improvements, a permit for construction is granted if a majority of the owners of the property benefiting request the same.

Under the public contract procedure, the cost of the improvement is assessed to the property benefited. Proceedings for this work are instituted under a local street improvement ordinance.

#### Types of Pavement Used

Three types of pavement are permitted in the residential districts:

1. Asphaltic concrete 6 inches in thickness.
2. Six-inch concrete base with 2-in. asphaltic concrete wearing surface.
3. Six-inch concrete pavements.

Types 1 and 2 are used where grades are 12% or less, Type 1 usually being preferred. Where subgrade is sand, a 6-inch macadam base is required with the asphaltic concrete pavement. Type 3, a plain concrete pavement, is used on grades over 12%.

#### STREET IMPROVEMENT WORK, 1946-1947

The total value of authorized street improvement contracts, both private and public, decreased from \$998,048.02 in 1945-46 to \$809,027.69 this fiscal year, a reduction of 19%. The authorized contracts provided for the improving of 20,170 feet or 3.82 miles of street.

The decrease in the amount of street improvement work was due in part to the fact that nearly all of the City's unpaved dedicated streets in the sand dune area are now paved or in the process



of being paved. Another factor contributing to the decrease was the difficulty in obtaining pipe for water mains and services. San Francisco does not permit a pavement to be constructed unless underground services such as water, gas, and side sewers have been installed. On many contracts, some of which were awarded 18 months ago, the contractor is still unable to complete his work because the water mains and services have not yet been installed. Because of this condition contractors hesitate to sign up much of this type of work until the water pipe situation improves.

A complete list of the new street improvements performed during the year has been given in the tabulation entitled, "Current Contract Data," Tables B-1 and B-2. The following tabulations indicate the volume of office activities carried on during the year in connection with street improvement procedures:

#### Assessments and Bonds

|                                                                    |             |
|--------------------------------------------------------------------|-------------|
| Assessments issued for cost of street work.....                    | 13          |
| Cost of street improvements covered by<br>assessments issued ..... | \$88,906.16 |
| Receipts for bond payments issued .....                            | 75          |
| Amount of bond payments collected .....                            | \$13,966.06 |

#### Street Work Proceedings

|                                                                              |     |
|------------------------------------------------------------------------------|-----|
| Resolutions of Intention passed .....                                        | 34  |
| Street Improvement Projects recommended to the<br>Board of Supervisors ..... | 32  |
| Notices of Street Improvement posted .....                                   | 502 |
| Notices of Resolution of Intention mailed .....                              | 639 |
| Ordinances ordering performance of street<br>improvements passed .....       | 29  |
| Proposals for street improvements published ...                              | 30  |
| Awards of Contract for street improvements ....                              | 27  |
| Notices of Recordation posted .....                                          | 90  |
| Notices of Recordation mailed .....                                          | 152 |
| Private contracts granted .....                                              | 46  |

#### STREET IMPROVEMENTS FINANCED BY CITY

Street improvement and reconstruction work performed by City Pay Public Contracts, as indicated in Table B-3 of "Current Contract Data," included streets fronting City-owned property, the widening and reconstruction of the roadway of existing streets, and improvement of streets on which streetcar lines had been abandoned.

The costs of improving streets fronting property under the jurisdiction of the Board of Education and Public Utilities Commission are assumed by those departments. Necessary funds are made available by Work Orders issued to the Department of Public Works. Funds for the improvement of streets fronting all other City Property are provided for that purpose in the annual appropriation ordinance. In addition to the above, the City is obligated to assume the cost of work on streets abutting property owned by the State of California and the United States Government.

#### STREETS IN FRONT OF PUBLIC PROPERTY

Development of the area east of the Sunnydale Housing Project required the improvement of Velasco Street including the portion fronting the Housing Project. Two public contracts were awarded for this work.

The improvement of Graystone Terrace, the northerly frontage of which is School Property, was improved at the same time as the remainder of the street. A public contract was awarded by the Department of Public Works, the necessary funds having been made available by the Board of Education.

Public contracts on streets fronting Sunset Boulevard were awarded for the construction of sidewalks on 36th Avenue, between Noriega and Quintara Streets, and 37th Avenue, between Moraga and Noriega Streets.

#### STREET WIDENING

Widening and reconstruction of the roadway of Bonview Avenue from Cortland Avenue to Eugenia Avenue was performed in order to provide sufficient roadway width on a much-used minor street. The roadway was widened from twenty feet to twenty-six feet. Work was performed by public contract from Special Road Improvement Funds.

#### STREETCAR STREETS

The removal of abandoned streetcar tracks and reconstruction of roadways on Bush Street, from Kearny to Sansome Street, and on

Sacramento Street, from Van Ness Avenue to Gough Street, were performed by Public Contract awarded by the Department of Public Works, a portion of the funds for the work having been provided by the Public Utilities Commission.

On the Bush Street work, rails were removed but ties were left in place. Trenches, excavated for rail removal, were filled with concrete and the entire roadway width resurfaced with asphaltic concrete pavement.

The removal of cable car tracks and reconstruction of the roadway of Sacramento Street, from Van Ness Avenue to Franklin Street, presented a more difficult problem. Car and cable-slot rails had to be removed, and the yokes and cable trough walls removed to at least three inches below sub-grade. Trough areas were filled with sand and all pavement in the track area removed. In the block between Van Ness Avenue and Franklin Street new pavement, consisting of a 6-in. concrete base and a 2-in. asphaltic concrete wearing surface, was constructed in the track area, in addition to reconstruction of asphaltic concrete pavement outside of the track area and the construction of combined concrete curbs and gutters. After removal of all track appurtenances between Franklin and Gough Streets, the track area was repaved with 6-in. concrete pavement conforming to the existing concrete pavement in the remainder of the roadway.

## STREET AND SIDEWALK INSPECTION

### Defective Sidewalks

In accordance with the Charter and ordinances of the City and County of San Francisco, the construction, maintenance and reconstruction of sidewalks are obligations of the property owner. Inspection of walks is carried on continuously by inspectors from the Street Improvement Section. Property owners are informed by mailed notices of any defects in their sidewalks and are directed to perform necessary work. Approximately 5,000 such notices are

sent out each year, a considerable percentage of which are ignored. Upon the accumulation of a sufficient number of parcels, where property owners have failed to comply with the notices sent them, public proceedings are instituted leading to an award of contract, the costs of the work to be assessed against the properties involved.

During the war period, this type of public contract work was necessarily abandoned. Following the cessation of hostilities, however, several proceedings were commenced and carried through to reception of bids but, on each of the last three occasions, proceeding had to be abandoned as no bids were received. The only other available method of enforcing the existing laws is by District Attorney Citation, requiring the negligent property owner to appear and show cause why the defective walk has not been repaired. This action has been taken several times during the past few months with satisfactory results in that the property owner in each instance had performed the necessary work before the date set for his hearing. This, however, is a very slow and cumbersome process, requiring the filing of individual actions, the serving of citations by the Police, and the holding of hearings before the District Attorney. Consideration is now being given to revision of existing ordinances with a view to establishing a more expeditious procedure.

#### Street Excavation Inspection

Present ordinances require that any person, firm, or corporation, before excavating in any of our City streets, obtain a permit from the Department of Public Works for which a small fee is charged. This also applies to the municipally owned Water Department. From these fees the costs of inspecting the replacement of the payment is paid.

During the war years, because of man-power shortage in the inspection branch of the Bureau of Engineering, inspection of this work was of necessity curtailed. With the recent filling of vacancies in the Bureau, a Junior Engineer has been assigned permanently to this work.

Utility corporations are required to maintain forever the pavement over their sub-surface plant. Consequently the rigid inspection of their contractors' work, by the Bureau of Engineering, has their full support.

### Notices, Investigations, and Reports

The accompanying tabulations indicate the number of actions of various kinds taken by the Street Improvement Section during the past year in connection with the maintenance of streets and sidewalks.

### Street Excavation Permits and Fees

|                              | <u>Permits</u> | <u>Lin.Ft.</u> | <u>Fees</u>        |
|------------------------------|----------------|----------------|--------------------|
| Pacific Gas and Electric Co. | 3,051          | 125,516        | \$ 5,242.50        |
| San Francisco Water Dept.    | 3,697          | 2,583          | 5,568.00           |
| Pacific Tel. & Tel. Co.      | 266            | 37,484         | 706.50             |
|                              | <u>7,014</u>   | <u>165,583</u> | <u>\$11,517.00</u> |

### Special Permits

|               | <u>Number</u> | <u>Fees</u> |
|---------------|---------------|-------------|
| Oil Tanks     | 45            | \$ 69.00    |
| Curb Lowering | 702           | 3,026.50    |
| Street Space  | 1,345         | 29,146.85   |
| House Moving  | 47            | 96.00       |

### Notices, Permits, and Investigations

|                                          |            |
|------------------------------------------|------------|
| Notices to construct or repair sidewalks | 4,839      |
| Notices to construct bulkheads           | 10         |
| Notices to remove obstructions           | 178        |
| Notices to obtain curb lowering permits  | 133        |
| Notices to construct guard rails         | 6          |
| Notices to obtain oil tank permits       | 10         |
| Notices to reconstruct side sewer traps  | 37         |
| Notices to replace side sewer covers     | 522        |
| Notices to obtain street space permits   | 430        |
| Street space permits reported on         | 4,148      |
| Oil tank permits reported on             | 49         |
| House moving permits reported on         | 54         |
| Miscellaneous information supplied       | 5,388      |
| Blasting bonds set                       | 5          |
| Curb lowering permits reported on        | 1,207      |
| Defects in pavements reported (written)  | 1,155      |
| Damaged signs reported                   | 52         |
| Excavation permits approved              | 6,394      |
| Excavation repaving inspected            | <u>822</u> |

Total notices and reports

25,439

Accident Damage Claims Investigated

| <u>Type</u>                                              | <u>Number</u> |
|----------------------------------------------------------|---------------|
| Sidewalk accidents                                       | 32            |
| Street Accidents                                         | 5             |
| Falling down City Hall steps                             | 1             |
| Falling over unguarded bank                              | 1             |
| Damage to dwelling - caused<br>by heavy trucks in street | 1             |
| Auto crashing through broken<br>guard rail               | 1             |
|                                                          | <u>41</u>     |

TRAFFIC CONTROL DEVICESTRAFFIC SIGNALS

By the end of the fiscal year, 6-3/4 miles of State Highway routes in the City had been equipped with modern, progressive type, three-light traffic signals. The one contract, awarded and completed during the year, covered the portion of 19th Avenue south of Vicente Street, a distance of 1-3/4 miles. The system on Lombard Street and Richardson Avenue, 1-1/2 miles long, started during the preceding fiscal year, was completed in May 1947. A number of individual intersections were also signalized during the year.

19th Avenue Signals

The signals installed on 19th Avenue during the past year constituted an extension of the Park-Presidio Boulevard-19th Avenue system from Vicente Street to the termination of 19th Avenue at Junipero Serra Boulevard and included seven major intersections. The system is timed for a vehicular speed of 30 miles per hour.

Lombard Street and Richardson Avenue

The completion of the installation on Lombard Street and Richardson Avenue, which forms the principal connection to the Golden Gate Bridge, was started during the preceding fiscal year but not completed because of delays in securing equipment. The Lombard Street portion was finally placed in operation on March 10, 1947, and the Richardson Avenue section on May 7, 1947. The

system includes 16 intersections and is timed for a speed of 25 miles per hour.

#### Bay Shore Boulevard

On January 1, 1947, a contract was awarded for the channelization of Bay Shore Boulevard from 3d Street to the County Line and the installation of traffic signals at four important intersections. Channelization work was substantially complete by June 30, 1947, but signal equipment had not been received.

#### Plans under way

Plans were started during the year for new, modern type signals on the main north-south route through the easterly portion of the City, extending from Bay Street on the north to Army Street on the south. The route follows Van Ness Avenue, Fell Street, 10th Street, and Potrero Avenue and will be about 4 miles long. A contract for furnishing the necessary signal heads and poles was awarded in the amount of \$82,858.61.

The preparation of plans is also under way for new signals on the principal crossings of Guerrero Street, between 14th and Army Streets, and on 3d Street, between Bay Shore Boulevard and Evans Avenue.

#### Miscellaneous Intersections

A number of separate intersections were signalized during the year to safeguard and expedite traffic at critical points. In three cases Wiley-type signals were used for the purpose. Modern, three-light signals were employed where the Wiley-type signals were not suitable. The special installations, with date of initial operation and job cost, are listed below.



Portola Drive at Woodside Avenue  
Before channelization



After channelization



| <u>Intersection</u>                | <u>Placed in Operation</u> | <u>Cost</u> |
|------------------------------------|----------------------------|-------------|
| Bay Shore Blvd. - Oakdale Ave.     | Sept. 23, 1946             | \$1733.13   |
| Mission & 13th Sts. (Wiley type)   | Nov. 15, 1946              | 812.87      |
| Geary & Franklin Sts. (Wiley type) | Nov. 22, 1946              | 660.98      |
| Geary & Polk Sts. (Wiley type)     | Dec. 9, 1946               | 450.17      |
| Third & 16th Sts.                  | Feb. 13, 1947              | 3274.00     |

### CHANNELIZATION

The channelizing of roadways and street intersections is rapidly becoming an important phase of traffic engineering work. Wide boulevards have many advantages but, when cross streets begin to develop heavy volumes of traffic it becomes necessary to provide facilities for guiding motorists in such manner as to avoid conflicts between opposing lines of traffic. This is particularly true where streets intersect at acute angles and at wide-throat and complicated intersections. Channelizing islands establish well defined lanes for conflicting traffic streams, thereby reducing the number of possible points of conflict. They also provide for the proper location of traffic signals, and, in wide roadways particularly, provide a haven for pedestrians midway of long crossings.

A number of important channelization projects were undertaken during the past year as mentioned briefly in the following paragraphs.

#### Portola Drive at Woodside Avenue

At the crest of the grade over the shoulder of Twin Peaks, the roadway of Portola Drive is 130 feet wide. Traffic entering the boulevard from Woodside Avenue on the north and O'Shaughnessy Boulevard on the south increased rapidly during the last few years and created serious traffic hazards as well as danger to pedestrians, because of the wide, uncontrolled areas for motor vehicle movement. The hazard was further increased by impaired sight distance due to vertical curvature, the acute angle at the Woodside Avenue intersection, and the sharp reduction of roadway width



St. Francis Circle  
Before channelization



After channelization

to 40 feet a short distance beyond the intersection. The intersection was channelized by the construction of a center island with a left-turn harbor at the principal intersection and suitable traffic striping to guide motorists into the proper channels.

#### Third and Berry Streets

Traffic at Third and Berry Streets, just north of the bridge across the Third Street Channel, has long been complicated by a heavy volume of cross traffic and several railroad tracks and sidings. The construction of channelizing islands has resulted in the orderly movement of traffic and has provided two places of refuge for pedestrians who necessarily cross this intersection in considerable volume.

#### Bernal Avenue and Monterey Boulevard

An outstanding example of a wide-throat intersection occurs at the junction of Bernal Avenue, San José Avenue, Monterey Boulevard, Joost Avenue, and Diamond Street. Traffic at this intersection was extremely heavy and confused because of the numerous angles at which entering traffic could intersect. This condition is being corrected by islands, traffic striping, and directional signs.

#### St. Francis Circle

St. Francis Circle at the intersection of Portola Drive, Sloat Boulevard, and Junipero Serra Boulevard is a 6-point intersection complicated by three intersecting streetcar lines. The paved area at the crossing has an area of 1.8 acres. The construction work recently undertaken provides for a combination of various channelizing islands, a central traffic circle, and one left-turn harbor.

#### TRAFFIC STRIPING

During the fiscal year 100.3 miles of streets within San Francisco were painted with traffic striping, pedestrian crosswalks

and painted pavement signs. The quantities of work accomplished are as follows:

| <u>Item</u>           | <u>Quantity</u>    |
|-----------------------|--------------------|
| Traffic Striping      | 262.6 miles        |
| Pedestrian Crosswalks | 1204 intersections |
| Lettered Signs        | 5121 words         |

The work required the use of 9,387 gallons of traffic paint and the gross expenditure for labor and materials was \$72,560.40. This cost compares favorably with the experience of previous years in spite of substantial increases in the cost of labor and materials.

San Francisco employs a sprayed, machine-laid, broken-line traffic lane and centerline stripe, each segment approximating 20 feet in length with a similar intervening distance between segments. Traffic lane striping is 4 inches in width; the double centerline stripe is composed of two 3-inch stripes separated by a 3-inch space. Pedestrian crosswalks are painted with solid 12-inch stripes, applied between masking boards with a hand-operated spray gun along the property line and the curb line extended. Painted pavement letters, hand-sprayed through metal stencils, are 4 feet in height to provide for visual foreshortening.

#### STREET SIGNS

Funds were appropriated for the 1946-47 fiscal year in the amount of \$50,000 to undertake the first stage of a general program to provide larger and more legible street signs throughout the City. The program was based on the belief of the Board of Supervisors that the existing signs are not sufficiently conspicuous to meet the needs of fast-moving motorists.

The present standard sign has been in use for the last 25 years. It is of the criss-cross type with bronze frames carrying porcelain enamel plates 4-1/2 inches wide by 21-3/4 inches long. The letters are three inches high shown in white on a dark blue background. They have proved to be extremely serviceable and maintenance costs have been relatively low. The heads

carrying the plates are mounted on a 3-inch iron pipe about 10 feet long.

It was the desire of the Board of Supervisors that the new signs carry letters at least four inches high and be approximately twice as large as the existing signs. After canvassing all manufacturers, it was found that no standard sign was being made which would meet these requirements and the Bureau of Engineering, therefore, proceeded to develop its own design. An experimental installation meeting the desired specifications was made at three intersections on Golden Gate Avenue in November 1946. Comments received from members of the Board, the newspapers, and the general public indicated that the design was acceptable to all concerned.

The plates used in the new signs are 7 inches wide by 33 inches long with a white porcelain enamel background. Black embossed letters 4 inches high are used. Four plates will be required for each sign in order to give visibility from all directions. One feature, not provided in San Francisco's existing signs, is a block number panel 4 inches wide by 12 inches long, mounted above each street name and showing by means of an arrow the direction in which the street numbers are increasing. Four of these plates are also required for each assembly.

In March, 1947, an order was placed for 3700 name plates and 3700 block number plates. The plates were manufactured in Berkeley and were delivered on July 7, 1947. In June a contract was awarded for the installation of 160 signs at approximately 100 different intersections, on Lombard Street and Richardson Avenue and in three new subdivisions, namely: Apparel City, Anzavista and Laurel Heights. The contractor was required to procure the necessary specially designed castings and fittings to make head assembly and also to furnish pipe standards in those cases where existing standards were not in place.

At the prices bid for the initial order of plates, the cost of the 8 plates making up one head will be \$14. Taking into account the cost of the plates and the contract erection costs, the total cost of installation will be \$30.50 for each sign where the existing standard can be used, and \$46.50 for each sign where a new standard must be furnished. It is expected that substantially lower prices will be obtained when larger contracts are awarded in the future.

Since the installation of new type signs throughout the City will obviously take several years, a comprehensive survey of the condition of existing signs in the downtown area was made during the past year and a program of repairs, cleaning, and rehabilitation was undertaken. The work was performed by the Bureau of Building Repair and by the end of the year 955 existing signs had been repaired, straightened, or painted.

### TRAFFIC INVESTIGATIONS AND STUDIES

#### VEHICULAR COUNTS

During the year 246 traffic counts were taken at various points within the City. The major portion of them were taken to provide information needed for design of the new traffic signal system on Van Ness and Potrero Avenues and for the adjustment of the timing of signals on the Lombard-Richardson route. Counts were also taken to determine the need of traffic control at various intersections and to bring up to date the traffic flow map for the portion of the City north of Pacific Avenue.

#### CLIPPER STREET SURVEY

Traffic counts were taken at the upper end of the Clipper Street Extension on Thursday June 19, 1947, the day before the new street was opened to traffic, and again on Thursday July 17, 1947, approximately one month later. The purpose was to determine the

amount of traffic diverted from Portola Drive by the new short cut to the Mission District.

Between the dates of the two counts there was a slight reduction in over-all traffic, presumably due to July vacations. After making a suitable adjustment for this general trend, the following conclusions were drawn from a comparison of the two counts:

1. Traffic between Portola Drive and the Mission District via Clipper Street and Grand View Avenue (rush hour only) increased by about 60 cars per hour, or about 24 per cent.
2. Traffic using Grand View Avenue decreased 40 per cent.
3. Traffic on upper Market Street below the Grand View Avenue intersection was 6 per cent less during the morning rush hour but just the same as before during the evening rush hour.

#### PARKING METER SURVEY

In close conjunction with the Police Department a parking meter survey was conducted of the Polk Street Shopping District. Parking stall locations, indicating the need for 560 parking meters, were established along 17,300 linear feet of curb frontage. Installation of the meters is planned to start during August 1947.

#### BAY AREA METROPOLITAN TRAFFIC SURVEY

On July 12, 1946, the California Division of Highways started work on a traffic survey in the Bay Area under the sponsorship of the U. S. Public Roads Administration. The City Engineer furnished technical assistance to the survey and acted as a co-ordinator of the various interested City departments in their contacts with the survey staff. Field work was practically completed at the end of the year and analysis of the results was under way.

The survey was conducted by the home interview method. One family out of every 20 in the City was questioned about all trips made by any member of the family during the previous day, and a record was made of origin, destination, purpose of trip, and type

of conveyance used. A record of 74,000 separate trips was secured in San Francisco alone. The data has been transferred to I. B. M. punch cards from which it is possible to take off any desired information. The supervisor of the survey has offered to furnish any specific material which may be desired by any of the departments of the City administration for planning purposes.

It is expected that a report will be issued in due time giving a complete analysis of the survey results and showing existing and anticipated travel by private vehicles and public transit over existing streets, and also on major projected improvements.

#### MISCELLANEOUS INVESTIGATIONS

The Traffic and Safety Section of the Division of Streets and Highways continued to make investigations and reports on the many proposals submitted to the City for improvement of traffic conditions. Reports were made to the Police Department on 306 separate proposals and an additional 470 letters were written to other departments and to private citizens. Most of these reports involved matters having to do with stop signs, traffic signals, loading zones, traffic striping, pedestrian crosswalks, one - way streets, and other problems falling in the category of traffic engineering.

All police accident reports were reviewed to discover damage to City property and 184 letters were written during the year with reference to such damages. These letters resulted in the collection of \$1,265.64 from persons who had damaged traffic signals, signs, or other City property.



SEWERS

Continued progress was made during the year on the long range program for the rehabilitation and development of the City's sewer system utilizing funds from the 1944 Bond Issue and from tax rate appropriations. Routine pipe sewer construction in subdivisions and as part of street improvements also continued, but the volume was below that of the previous fiscal year due principally to the scarcity of vitrified clay pipe. Two of the completed projects will eliminate sanitary sewage outfalls on the north shore of the City. Construction of major projects such as the Lake Merced and Lake Street systems was temporarily held up pending further study of relative priorities and re-budgeting of the funds available in the light of current high construction costs.

CONCRETE SEWER CONSTRUCTION AWARDED

During the spring of 1947 six contracts were let for reinforced concrete sewers aggregating about one mile in length, more than half being centrifugally spun reinforced concrete pipe. Two, namely, the Glen Park Sewer and the Baker Street Outfall Sewer were completed by the end of the fiscal year. These as well as the four not completed are described briefly below.

The Glen Park Sewer, designed to take care of future development in the canyon above Glen Park Playground, consisted of about 600 feet of 60-inch reinforced concrete spun pipe. This sewer replaced an old and worn out rectangular wood box sewer under Glen Park Playground.

The Baker Street Outfall Sewer, consisting of 182 feet of 5'-6" x 6'-0" rectangular storm sewer on creosoted timber piles, forms the outlet of a storm water overflow line from Marina Boulevard and Baker Street to the bay, replacing 127 feet of an old worn out corrugated metal outlet. The old outfall terminated in shallow water on the beach and was subject to clogging by beach sand. The new outfall corrects this condition as it carries the flow 55

feet further out into deeper water.

Fender piles and warning signs were placed around the end of the sewer to avoid possibility of boat collisions.

The 46th Avenue and Lincoln Way Diversion Sewer, consisting of approximately 1150 feet of 30-inch centrifugally spun reinforced concrete pipe will divert sanitary flow plus a small amount of storm water from the Lincoln Way Sewer at 46th Avenue to the Richmond-Sunset Sewage Treatment Plant. This diversion line, which is being constructed at a cost of about \$28,000, will reduce pumping costs at the treatment plant and will avoid the necessity of providing additional pumps as the load on the treatment plant increases.

The Vicente Outfall, from 45th Avenue to the ocean beach, is designed to act as a storm relief for the West Portal and a portion of the West Sunset drainage districts and will relieve the existing sewers on 46th, 47th, and 48th Avenues from Vicente St. to Lincoln Way. The sewer consists of large diameter reinforced concrete centrifugally spun pipe with an outfall structure supported on concrete piles and provided with check-gates to prevent back flow.

The Alemany Sewer, Section "G", which consists of three 10' x 7½' compartments of reinforced concrete on piles, is an extension of the existing Alemany Sewer and replaces an old wood box sewer which is in poor condition. The extension and replacement completes the permanent construction of the Alemany Sewer, a combined sewer serving the Islais Creek District. The new extension is 473 feet long and runs from the vicinity of Napoleon and Selby Streets to the head of the Islais Creek channel.

A diversion structure, to provide for future diversion of sanitary sewage to the proposed Southeast Sewage Treatment Plant, is to be constructed at the lower end of this sewer. Where the sewer passes under the Southern Pacific Company's timber railroad

trestle at Napoleon Street, a permanent plate girder bridge is being constructed by the company to span the new sewer.

In conjunction with the extension of the Alemany Sewer, provision is made in the same contract for replacing the old temporary wood box outlet of the Army - Marin St. Sewer with 57 feet of new 10' x 8' reinforced concrete sewer on piles, similar to the existing concrete sewer.

The Caselli Ave. Sewer, in Caselli Avenue from Eagle Street to Douglass Street and in Douglass Street from Caselli Avenue to 18th Street will consist of 1600 feet of 2' x 3' and 2'-6" x 3'-9" reinforced concrete egg-shaped sewer and 285 feet of 21" vitrified clay pipe sewer. The new sewer will replace the present inadequate pipe sewers which have caused frequent flooding of Caselli Avenue near Yukon and Clover Streets.

#### COMPLETION OF CONCRETE SEWERS AWARDED LAST YEAR

Five concrete sewer contracts, awarded during the preceding year, were completed or nearly completed this year, namely, the Scott St. Sewer, Sections BC-AD; Upper Army St. Sewer Section A; Lower Army St. Sewer; Hampshire St. Sewer; and Folsom St. Sewer. Details of construction are summarized in "Current Contract Data." Special comments applying to the first three contracts are contained in the following paragraphs.

The Scott St. Sewer, Sections BC-AD, extending 17 blocks from 17th Street and Treat Avenue to Steiner and Waller Streets, via 17th, Church, 14th, Sanchez, and Steiner Streets, is now virtually complete, seven months behind schedule. The reasons for the late completion were many and varied, the most notable being:

The starting of work on 17th Street was delayed because the Pacific Telephone and Telegraph Co. could not procure the cable required for the adjustment of its facilities along the line of the work.

Suspension of work for 90 days during the rainy season, the suspension being permitted only after the Contractor had backfilled and repaved all open trenches so that street traffic would not be interfered with.

A 33-day delay because of the reconstruction of a 30" water main at 17th and Guerrero Streets.

A 45-day delay because of a labor shortage, and also shortages of vitrified clay pipe and aggregate caused by transportation difficulties.

The construction of the portion of the sewer along Church Street from Market Street to 17th Street made it necessary to remove the street car tracks used by the "J" line of the Municipal Railway. The contract called for the removal and construction of these tracks and also the removal of the outer pair of tracks used by the No. 22 line, including the Market Street crossing. The track work and the repaving of the street within the track area were paid for by the Municipal Railway. Street car service on Church Street was suspended from March 27, 1946 to October 23, 1946.

The Army St. Sewer, Section A in Church Street from 25th St. to 27th St., a distance of four blocks, also required the removal and reconstruction of a pair of street car tracks. The work was somewhat delayed by a rather unusual ground water condition. Sewer trenching progressed northerly from 27th Street in practically dry ground for three blocks and then encountered water-bearing sand, which was drained through rock back-fill into the underdrain beneath the new sewer. After completion of the sewer and back-fill and establishment of the sub-grade for the track work, it was discovered that the ground at the lower end of the job near 27th Street was saturated with water to such an extent that satisfactory rolling was impossible. The source of the penetrating water was not satisfactorily established, the only plausible theory being that it had percolated along and under the completed sewer to the lowest part of the job. To eliminate this ground water, a 4'-6" shaft was excavated at the lower end of and adjacent to the sewer, from sub-grade to the elevation of the sewer base. Three holes were then drilled through the sewer at spring line and the shaft filled with filter rock. After a few days ground water subsided and test holes dried up. Rolling was then successfully completed.

The Lower Army St. Sewer between Potrero and San Bruno Avenues, a concrete structure on piles, replaced an old brick sewer which had sunk nearly two feet below grade and showed signs of failure. Upon removal of the old brick work, it was found that it had been supported on a double layer of 4" x 12" planks resting on caps and piles. Since the timbers were remarkably well preserved, their removal was an extremely difficult operation because of the limited working space within the well-braced cofferdam. The cost of removal was paid for as extra work since the plans and specifications gave no indication that such work would be required.

#### PIPE SEWER CONSTRUCTION

Nine pipe sewer contracts, aggregating about 1.5 miles in length, were started and completed during the fiscal year and three started during the preceding year were completed. All but two were built with vitrified clay pipe. Details as to dimensions and cost are given in "Current Contract Data." Further comments on the contracts awarded this year will be found below.

The Alpine Terrace Sewer was a routine replacement in line with the City's policy of replacing existing sewers in order of their need as funds are available.

The Ellis St. Sewer provides a connection from St. Joseph's Avenue to an existing 3' x 5' brick sewer at the intersection of Ellis and Broderick Streets and drains a portion of the new Anza - vista subdivision.

The Clipper St. Sewer was found to be in need of replacement during construction of the Extension of Clipper Street. It was therefore immediately replaced so that traffic over the street extension would not be interfered with at a later date. The specifications for this sewer included provisions to permit the examination of the existing sewer, in place, as was done on the Pine St. Sewer project.

The Stanley St. Sewer in 19th Ave. opposite Denslow Drive, consisting of about 200 feet of salvaged 18" cast iron pipe, was

constructed at the request of the City Architect. This sewer replaces an 18" cast iron pipe sewer existing in property on which the Chemical #12 Fire House of the Fire Department is to be constructed.

The Fitzgerald Ave. Sewer was an extension of an existing sewer into the bay to avoid continued maintenance of the open ditch which served as the overflow outlet of the Fitzgerald Ave. pumping station and also to permit the filling of the street and the adjoining property.

The Fairmount School Sewer was relocated to accommodate contemplated enlargement of the school.

The Laguna St. Diversion Sewer on North Point Street, from Laguna Street to Webster Street, and on Webster Street from North Point Street to Beach Street was constructed to divert sanitary sewage from the combined Laguna St. Sewer at North Point Street to the Marina Pumping Station, from which point the sewage will be pumped to the outfall at North Point.

This new diversion line consists of 1225 feet of 21" V. C. pipe about one-half of which is on reinforced concrete foundation. This diversion replaces an existing 12" diversion line on Beach St. from Laguna St. to Webster St. which was inadequate and permitted sanitary sewage to flow past the diversion into the bay. The new line corrects this condition and assists in cleaning up the bay in the vicinity of the Fort Mason Transport Docks.

The Lincoln Park Sewer consists of about one-half mile of V.C. pipe designed to carry the sanitary flow from both the California Palace of the Legion of Honor and a Park Convenience Station adjacent thereto to an existing sewer at the intersection of 34th Avenue and Clement Street. Funds to cover the cost of plans, specifications and construction were provided in proportionate shares by the Park Commission and the Board of Trustees of the California Palace of the Legion of Honor.

The 24th St. Sewer extends about 300 feet easterly along 24th Street from its intersection with Illinois Street and terminates on a mud flat at the bay shore. Cement-asbestos pipe 18" in diameter was selected because the joints could be made with couplings and rubber gaskets thus furnishing the flexibility necessary for the soft ground on which the sewer was to be constructed.

Before construction of the new outlet, the sewer terminated on private property. An investigation by the Bureau of Sewer Repair disclosed that because of unauthorized filling by persons unknown, the outlet was in danger of being blocked and that stoppage of the sewer might cause damage at the Pacific Gas & Electric Co. Power Plant located at 23d Street. To safeguard the City's interest, it was considered essential to provide a satisfactory outlet on 24th Street and to abandon the temporary line terminating on private property.

As the proposed sewer offered no immediate benefit to the two property owners along the line of the sewer, and as it was in the nature of an outfall and would therefore be considerably larger than would be required in an ordinary city street, the extension was constructed with City funds. Construction through assessment proceedings might have been successfully opposed and in any event would have so delayed completion that the City would have taken an unwarranted risk of damage to the private property served by the existing sewer.

#### TEST BORINGS FOR LAKE MERCED SEWERS

Two test boring contracts were completed during the year to provide subsurface information needed for the design of two major units of the Lake Merced sewer system.

Along the line of the proposed tunnel under Fort Funston (Section D of the Lake Merced project), 8 holes were bored to depths varying from 40 to 210 feet. Chester Marliave, Consulting Geologist, was employed to supervise the borings and analyze the results. The

tunnel lining is being designed in accordance with his advice and recommendations.

Section C of the Lake Merced project will be a partially submerged rectangular sewer carried on concrete piles across the lower arm of the lake. To serve as a basis for determining necessary pile lengths, 7 test holes were bored in the lake using floating equipment. Dames and Moore, Foundation Engineers, were engaged to direct boring operations, take samples of soils encountered, and test them for shear, friction, and consolidation. Their report indicates that proper support of the sewer will require piles varying in length from 40 to 70 feet.

#### INVESTIGATION OF CONDITION OF OLD SEWERS

The replacement of 9 blocks of old sewer on Pine Street and one block on Middle Street and the accompanying careful examination of the old pipe in place were completed during the past year and the results carefully studied and analyzed. The purpose was to ascertain what happens to sewer pipes after 50 to 70 years of service so that a definite basis could be adopted for determining when and under what conditions replacements are justified.

The investigation disclosed, as expected, that the older sewers were in the worst condition but the defects noted were clearly due to faulty workmanship and materials rather than age. The interior of the pipes showed no evidence whatever of chemical action and little indication of erosion. Furthermore, in spite of extensive cracking of the thin-walled clay pipe used in early days, no actual collapse had occurred.

The examination showed that the oldest sewers contained more cracked pipes and more repair jobs than the others. It was also demonstrated that those blocks in which the greatest number of repairs had been made also contained the greatest number of remaining defects. This would seem to indicate that age could be used as the criterion for determining the worst sewers and that this determina-



tion could be confirmed by noting the number of repair jobs performed. Such determinations would, however, necessarily be modified by consideration of the types of sub-grade in which the sewers were constructed.

It was concluded that depressions in the pavement, or other surface indications could not be relied upon to fix the location of all underlying cavities or defective sewer joints.

A possible general conclusion of the investigation might seem to be that all of the old sewers in San Francisco are in poor condition. Nevertheless, it was clearly demonstrated that the oldest sewers can function satisfactorily for an indefinite period even though defective in many particulars. Wholesale replacement of all old sewers is obviously out of the question from an economic standpoint and there appears to be no certain method of selecting those which are in such bad condition that failure of pipe or pavement is imminent. Consequently, the City has no alternative but to continue the present practice of repairing breaks as they occur and at the same time taking every precaution to insure the early discovery of breaks or serious leaks requiring attention.

As a result of the investigation and the conclusions drawn from it, the Department has tentatively adopted the policy that an existing pipe sewer will be replaced only when -

- (a) its capacity is deficient, or
- (b) it fails to function satisfactorily because of settlement or collapse, or
- (c) the annual cost of repairs in any block approaches the annual interest charge on the probable cost of replacement, or
- (d) there is tangible evidence that defects exist which are likely to cause collapse of the overlying street pavement or other damage.

At the same time intensive efforts will be devoted to the discovery of dangerous defects in sewers by inspection at manholes and by periodic examination of overlying pavements. Special attention will be given to sewers where extensive repairs have been found

necessary in the past; where the pipe is over 65 years old; and where it is known to be laid in sand.

#### ELIMINATION OF NORTH SHORE POLLUTION

With the improvements completed this year and those in immediate prospect, the City is rapidly approaching its long planned objective of removing all sources of sewage pollution from its westerly and northerly shores. The first and most beneficial steps, completed some time ago, were the construction of the Richmond-Sunset Sewage Treatment Plant and the Sea Cliff and Marina pumping Plants. Four further steps were taken in the past fiscal year.

Two new sewers, described in a previous paragraph, will divert sewage flow which formerly reached the north shore at Lincoln Park and at the foot of Laguna St. The contract recently awarded for construction of the Hyde St. pumping station will prevent future flow of sewage into the Aquatic Park Area. In June 1947, the War Department was granted a permit to connect the Fort Mason sanitary sewer system to the City sewer at the intersection of Laguna and North Point Streets, thereby preventing further pollution of the Transport Dock area.

The improvements will clear up the whole of the north shore except for small existing private sewers at Fisherman's Wharf and Sutro Baths, and a very few outlets from the low-lying areas of the Presidio.

One further improvement needed is a pumping station at 48th Avenue and Fulton Street which will divert to the treatment plant a small volume of sewage which is now going untreated into the Golden Gate at Mile Rock.

#### SEWAGE DISPOSAL

The Sewage Disposal Section of the Division of Design devoted its attention during the past year primarily to the plans for the North Point Sewage Treatment Plant. It was necessary, however,

to devote a good deal of time to the checking of shop drawings for the enlargement work at the Richmond-Sunset Sewage Treatment Plant which was under way during the period. In connection with the latter plant, a formal application was made to the State Department of Public Health for approval of the enlargement and the issuance of a permit.

#### SEWAGE TREATMENT PROGRAM

The recent order of the State Department of Public Health, issued under authority of State Law, prohibiting the discharge of raw sewage into the waters of the State, makes it necessary for San Francisco to expedite in every possible way its program for sewage treatment. The westerly portion of the City is now amply provided for by the enlarged Richmond-Sunset Sewage Treatment Plant, but the sewage from the easterly half of the City, containing about three-quarters of its total population, is now being discharged untreated into the bay. Since all of this sewage can not be collected and diverted to a single point, two treatment plants will eventually be required.

The planning of the first and larger of the two, referred to as the North Point Treatment Plant, has been under way since the 1944 Sewer Bonds were authorized, and financing, largely by means of State subventions, has been arranged. This plant will serve roughly the area north of Army Street. The southerly portion of the easterly half of the City will eventually be served by a second plant, to be called the Southeast Sewage Treatment Plant. No financing is available for this plant at the present time and engineering studies are only in a preliminary state.

The North Point Treatment Plant will consist of two widely separated units connected by a 6-mile force main. Preliminary treatment will be provided at a site near the intersection of Bay Street and Grant Avenue. The sludge will be treated at a site located in the vicinity of Quint Street and Jerrold Avenue, where the Southeast

Plant will also eventually be constructed.

#### NORTH POINT PRELIMINARY TREATMENT PLANT

Plans for the preliminary treatment unit at North Point are being prepared by the Bureau of Engineering, with consulting advice from Clyde C. Kennedy, Consulting Sanitary Engineer. Ambrose & Spencer, Architects, were employed to design the exterior features of the buildings and the landscaping of the grounds.

The plant will include bar racks and screens, grit removal tanks, a pumping station consisting of five units, six sedimentation tanks, and facilities for chlorination. The plant effluent will be discharged into the bay through four pipe lines supported on Piers 33 and 35. The sludge will be pumped through a pipe line to the sludge treatment plant at Islais Creek.

#### NORTH POINT SLUDGE TREATMENT PLANT

The sludge treatment plant at Islais Creek is being designed by Clyde C. Kennedy, Consulting Sanitary Engineer, under an engineering contract with the Director of Public Works. The plant will include a thickening and receiving unit, 10 digestion tanks in groups of 5 each, 4 vacuum filters, 3 drying furnaces, and facilities for storing and loading the dried sludge, which is expected to have a substantial commercial value as a fertilizer. There will also be a waste treatment unit for conditioning the plant effluent before it is discharged into the sewer system.

The design of the sludge treatment plant takes fully into account the future Southeast Plant to be constructed on the same site. Many of the facilities which will be common to both plants are being laid out in such a way that suitable enlargements can readily be made, and space for other types of future facilities have been allocated in such a way as to utilize the whole site to the best advantage.

LANDSLIDE CORRECTION

No new slide areas developed during the past year. Observations on slide movement, subsidence, and erosion were continued at various danger spots in the City.

LOCATIONS UNDER OBSERVATION

Anza St., between Parker Ave. and Blake St.

Union St., East of Calhoun St.

Parker Ave. Slide, between Turk and Anza Sts.

Bernal Ave. (retaining wall on east side)

Lands End Slide in El Camino del Mar

Francisco and Larkin Sts. (retaining wall)

The observations show only minor movement in these areas during the past year. The small amount of rainfall, 14.25 inches, as compared with an average annual normal rainfall of 22.02 inches, together with its uniform distribution during the winter season probably accounts for the relatively small earth movement noted.

BERNAL AVENUE

Corrective measures were taken at the old slide area on the west of Bernal cut, between Miguel St. and St. Mary's Ave., where private property was being endangered. The slide area was excavated in a series of benches, subsurface drainage was installed, and the excavated area re-filled with quarry rock to the general slope lines of the adjacent undisturbed ground. To prevent dislodgement of the rock and to seal the surface a two-inch coat of gunite was applied to the rock slope. To harmonize the treated slope area with the adjoining undisturbed ground surface, the gunite was colored by the addition of two pounds of brown iron oxide to each sack of cement used. This procedure proved very satisfactory. This treatment of the slide was adopted as a substitute for a much more costly retaining wall.



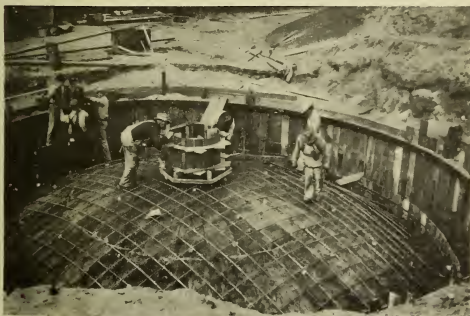
Bernal Avenue  
showing gunited rock slope

#### EL CAMINO DEL MAR

Studies made by Consulting Geologist Hyde Forbes in the fall of 1946 indicated that the Land's End slide in El Camino del Mar cannot be stabilized at any reasonable expense due to the tremendous extent and depth of the sliding earth and rock mass. It appears, however, that a deflection of the roadway southerly within the limits of permissible curvature will place it near or just above the upper limit of the slide. This relocation would require considerable encroachment on the Federal property within the Fort Miley reservation. The Corps of Engineers has agreed to recommend favorably on our request for a roadway easement through the reservation whenever we are prepared to submit a formal application. During the next fiscal year further surveys and studies will be undertaken to determine definitely the feasibility of the relocation and the probable cost of construction.

ANZA STREET RECONSTRUCTION

The completion of Anza Street to full width between Parker Avenue and Blake Street has long been deferred because of the suspected instability of the steep slopes of Lone Mountain along the southerly street margin. A complete review of the boring records taken several years ago and a further study of the geology of the area were made during the past spring. The results indicate that the necessary excavation of the encroaching mountain side could safely be undertaken, provided a deep drainage system is installed in advance to stabilize the slope. Further borings to explore this possibility are being considered.



Dome of fire cistern  
Single layer steel reinforcement

AUXILIARY WATER SUPPLY SYSTEM

This system provides a high pressure stand-by service for fire protection. Since the inception of the system early in 1908, the Bureau of Engineering has, at the request of the Fire Department, furnished all necessary engineering services in connection with the design, installation, and incidental alterations of the system. During the past year several major adjustments of high pressure pipe lines became necessary because of street construction projects undertaken or contemplated.

17TH STREET FROM MISSION ST. TO DOLORES ST.

To accommodate the construction of a new 5'-9" concrete sewer in 17th Street, forming a part of the Scott Street System, it was necessary to shift 1975 feet of high pressure line to the south a distance of 2 feet 2 inches. The line consisted of 16", 14", and 12" pipe. After a trench of required width had been excavated, the pipe was jacked to its new position and joints then re-calked where necessary. The work was done during the winter by the sewer contractor. A cross-over for the 12" line in Folsom St. was also constructed.

NAPOLEON ST., RANKIN ST., AND FAIRFAX AVE.

Contemplated street improvements in the following locations within the subsiding area of the city made it necessary to provide in advance for raising the high pressure mains so as to bring the center line to the standard depth of 5 feet below official street grade:

Rankin St. - Evans Ave. to Fairfax Ave.  
Fairfax Ave. - Rankin St. to Quint St.  
Napoleon St. - Jerrold Ave. to Evans Ave.

This work was done by contract using Fire Department funds.

The work in Rankin Street and Fairfax Avenue involved raising approximately 800 feet of 12" line and appurtenances, an average of five feet. After the pipe was exposed by excavation, it was



raised to the required grade by means of slings supported by screw jacks bearing on gallow's frames spanning the pipe trench. This work has been completed.

The work in Napoleon Street now under way involves the raising of about 1690 lineal feet of 12" pipe an average of three feet. After exposing the pipe by trenching, the contractor is raising it progressively in 6-inch lifts and backfilling with sand after each lift. A side-boom tractor and a tractor crane working alongside the trench furnish the lifting power.

#### EVANS AVENUE AT ARMY STREET

The construction of the new Evans Avenue Bridge now under way near Army Street necessitates extensive re-arrangement of the high pressure pipe lines in the immediate vicinity. About 160 feet of new 12" double spigot Class "H" pipe will be laid in the railroad cut in a line parallel with the new bridge. Connections will then be made to the existing Army Street and Evans Avenue pipe lines, after which the old line across the cut will be disconnected and removed.



Fairfax Avenue  
Method of raising 12" A.W.S.S. pipe line

STREET DEDICATIONS AND CHANGESSUBDIVISIONS

Additional subdivisions were developed within the City during the past year but at a somewhat reduced rate as compared with the year before.

Tentative Maps

Seven tentative maps covering the tracts listed in the following table were received from subdividers for review. Copies were sent to the City Planning Commission for recommendation. All maps were checked by the Bureau for boundary and subdivision lines, street grades, sewer design and location of catch basins.

Tentative Maps Received 1946-47

Apparel Heights - an area of five blocks near the top of Bernal Heights  
Postal Heights - a resubdivision of a portion of Miraloma Park  
Assessor's Block 3010 - a resubdivision of a block in Miraloma Park  
Resubdivision of University Mound Block 55  
Resubdivision of part of Anzavista - showing lots and blocks  
Shangri-La Tract  
Perego Heights

Maps Filed

Ten final subdivision maps were approved and filed in the Recorder's Office during the year as indicated below:

Subdivision Maps filed 1946-47

Pueblo Street - County Line to ± 50' northerly  
Grand View Terrace  
Map of Portions of Blocks 2509, 2510, 2511, 2512, 2518  
Sun Valley Subdivision  
Sunnydale Garden  
Map of Anzavista  
Map of subdivision of portion of Assessor's Block 7065  
Valerton Court  
Resubdivision of part of Anzavista  
Resubdivision of Assessor's Block 3010

Laurel Heights Subdivision

Laurel Heights, containing approximately 84 acres within the Laurel Hill Cemetery, is being converted into a modern subdivision providing home, school, and business sites. The subdivision is bounded by Parker Avenue, California Street, Presidio Avenue, and on the south by a line extending from Presidio Avenue Near Post Street to Parker Avenue at Euclid Street.

The subdivision was originally designed for residential and commercial purposes but sites for school facilities are now included. One area of approximately 529,000 square feet fronting on California Street and Presidio Avenue has been purchased by the City as the site for the new Lowell High School. The City has also purchased an area on Euclid Avenue between Cook Street and Collins Street for the enlargement of the John W. Geary School and the establishment of a playground.

The commercial area is located along California Street, between Spruce and Laurel Streets. Off-street parking will be provided for patrons of the stores.

Grading and street work are progressing. The grading is about 80% complete and sewers 90% complete. Some curbs have been constructed and the paving, though delayed because of scarcity of water pipe, will be started soon.

Anzavista Subdivision

"Anzavista," containing approximately 55 acres, is bounded by Geary Boulevard, St. Joseph's Avenue, Turk Street, and Masonic Avenue. Grading, paving, and underground installations, such as gas, water, electricity, and telephone, are practically completed. Many lots have already been sold and several residences are being constructed.

The greater portion of Anzavista is zoned as Second Residential which permits the erection of homes and multiple dwelling units. The portion of the tract fronting on Geary Boulevard and

Masonic Avenue and comprising 288,000 square feet is zoned as Commercial and owned by Sears, Roebuck & Company. A large store facing Geary Boulevard will occupy a portion of this area but the greater part will be devoted to a parking area for the use of the store's customers.

The area now known as "Anzavista" was formerly the Calvary Cemetery.



Anzavista Tract - New residential district  
Site formerly occupied by Calvary Cemetery

SURVEYS AND MAPPINGGENERAL SURVEYS

Five survey parties were employed continuously until the end of October, 1946, and four parties thereafter until the end of the fiscal year. The work included preliminary topography, profiles and cross-sections required for design purposes; the setting of control lines and elevations preceding construction work; and final surveys to determine quantities of work done and to record actual position, dimensions and elevations of completed work. Surveys made covered about 459,310 lineal feet or 87 miles in 831 city blocks. Distribution by type of survey is shown below:

General Surveys

| <u>Type of Survey</u>              | <u>Length in Feet</u> |
|------------------------------------|-----------------------|
| Lots                               | 13,900                |
| Sewers                             | 44,800                |
| Cross Sections                     | 56,795                |
| Subsidence levels                  | 94,200                |
| Monument Lines                     | 46,870                |
| Topography                         | 49,900                |
| New Streets                        | 53,560                |
| Line and Grade for curb and paving | 66,335                |
| Miscellaneous                      | 13,250                |
| Block Resurveys                    | <u>19,700</u>         |
| Total                              | 459,310               |

In connection with the above work 53 monuments were set, checked, referenced or re-capped.

PRECISE LEVELS

In addition to the general surveys described, precise level lines were run aggregating 59.18 miles and 3,107 bench marks were set. This was distributed by districts as follows:

Precise Levels and Bench Marks

| <u>District</u>     | <u>Bench Marks</u> | <u>Distance - Miles</u> |
|---------------------|--------------------|-------------------------|
| Mission             | 1,532              | 35.50                   |
| Western Addition    | 1,258              | 19.96                   |
| South San Francisco | 26                 | 0.40                    |
| Sunset              | 16                 | 0.25                    |
| Potrero             | 25                 | 0.10                    |
| Fifty Vara          | 102                | 1.00                    |
| Homesteads          | 148                | <u>1.97</u>             |
|                     | 3,107              | 59.18                   |

Levels were also run over the subsidence bench marks set during the preceding fiscal year in the 50 Vara and 100 Vara Districts involving about 13.5 miles of line.

Thirty-nine of the U. S. Coast and Geodetic Survey benches located within the boundaries of the City were tied in with the City Datum Plane.

#### NUMBER OF SURVEYS AND FEES RECEIVED

The following tables show the number of surveys performed during the year and the fees received from contractors and others to cover the cost of surveys made:

##### Public Improvement Surveys

|                                            |            |
|--------------------------------------------|------------|
| For Public Contracts                       | 30         |
| For Private Contracts                      | 59         |
| Resurveys for Private and Public Contracts | 66         |
| For Municipal Departments                  | <u>124</u> |
| Total Surveys for Public Improvements      | 279        |

##### Lot Surveys

|                           |          |
|---------------------------|----------|
| For Private Owners        | 1        |
| For Municipal Departments | <u>9</u> |
| Total Lot Surveys         | 10       |

##### Survey Fees Received

|             |        |
|-------------|--------|
| <u>1946</u> |        |
| July        | \$ 590 |
| August      | 1,625  |
| September   | 380    |
| October     | 2,000  |
| November    | 1,360  |
| December    | 800    |

|             |            |
|-------------|------------|
| <u>1947</u> |            |
| January     | 150        |
| February    | 200        |
| March       | 3,035      |
| April       | 490        |
| May         | 2,765      |
| June        | <u>110</u> |
| Total       | \$13,505   |

#### MAPS

The Division of Surveys maintains files of all available maps and records pertaining to the streets of San Francisco, block and monument lines, and City owned property. Information from these

files is furnished on request to all City departments and the general public.

One particularly useful file consists of 354 sheets known as the "Hundred Scale Maps" covering all parts of the City on a scale of 100 feet to the inch. The information recorded on these maps is official, being derived from ordinances or resolutions passed by the Board of Supervisors. The data consists of the correct spelling of the names of all streets, ways, avenues, lanes, alleys, courts, and terraces; all street name changes; street openings and closings, extensions and widenings; and property owned and acquired by the City. The number of the ordinance or resolution is noted on the maps as well as a reference to indicate the particular volume in which these ordinances and resolutions are filed.

On a similar set of 354 sheets of these Hundred Scale Maps are recorded the official grades of all streets in the City. Thirty-one of these 100 Scale Grade Maps were revised and brought up to date. There is also maintained a card index showing the official widths of streets and sidewalks and a reference to the ordinances covering them.



Station wagon used by field party

GRADES ESTABLISHED

Grades were established on ten blocks of seven different streets having an aggregate length of 7,216 feet or 1.36 miles at the locations indicated below:

Monterey Blvd. - Ridgewood Ave. to San Anselmo Ave.  
 Persia Ave. - Mission St. to Ocean Ave. (new street)  
 Kempton Ave. - Alemany Blvd., northerly  
 39th Ave. - Yorba St. to Sloat Blvd., one block  
 44th Ave. - Wawona St., southerly one block  
 Velasco Ave. - Santos St. to Rio Verde St.  
 Ramsell St. - Palmetto Ave. to Alemany Blvd.

GRADES CHANGED

Official street grades were changed during the year on 22 blocks on 15 different streets having an aggregate length of 9,925 feet or 1.88 miles at the following locations:

|                  |                  |    |               |
|------------------|------------------|----|---------------|
| 39th Ave.        | Vicente St.      | to | Wawona St.    |
| 40th Ave.        | Vicente St.      |    | Yorba St.     |
| 41st Ave.        | Vicente St.      |    | Wawona St.    |
| 42nd Ave.        | Vicente St.      |    | Wawona St.    |
| 43d Ave.         | Vicente St.      |    | Wawona St.    |
| Wawona St.       | 39th Ave.        |    | 44th Ave.     |
| 27th St.         | Castro St.       |    | Diamond St.   |
| Clipper St.      | Douglass St.     |    | Portola Dr.   |
| 44th Ave.        | Vicente St.      |    | Wawona St.    |
| Dublin St.       | Persia Ave.      |    | Russia Ave.   |
| St. Josephs Ave. | Ellis St.        |    | O'Farrell St. |
| O'Farrell St.    | St. Josephs Ave. |    | Broderick St. |
| Lakeview Ave.    | Jules Ave.       |    | Ashton Ave.   |
| 45th Ave.        | Ulloa St.        |    | Vicente St.   |
| Gaven St.        | Merrill St.      |    | Boylston St.  |

CHANGES IN SIDEWALK WIDTH

Sidewalk widths were officially changed on the four blocks indicated below having a total length of 2,910 feet or 0.55 of a mile:

Bancroft Ave. - Third St. to Mendell St.  
 Walks reduced from 15 feet to 10 feet on north-easterly side and 12 feet on southwesterly side.

Jessie St. - 9th St. southwesterly  
 Walks reduced from 6 feet to 2 feet 6 inches.

Hubbell St. - 7th St. to 16th St.  
 Walks reduced from 15 feet to 10 feet on northwesterly side and abolished on southeasterly side.

Barneveld Ave. - Jerrold Ave. to Oakdale Ave.  
 Walks changed varying amounts by means of a filed map, the purpose being to improve roadway alignment.



CLOSING AND ABANDONING STREETS

Fifteen petitions to close and abandon portions of City streets and one petition to open and extend a street were received, investigated and acted upon. Of these, eleven are still under consideration; two have been denied and the following were recommended and passed:

|                                                    |                                                                      |
|----------------------------------------------------|----------------------------------------------------------------------|
| Corwin St.                                         | Acme Alley to 128' westerly                                          |
| Pueblo St. Extension                               | County Line to $\pm$ 50' northerly                                   |
| Charlestown Place                                  | 137.5 ft. northwesterly of Harrison St. to northwesterly termination |
| York St.                                           | Alameda St. to Division St.                                          |
| Molimo Drive and an unnamed alley in Miraloma Park |                                                                      |

STREET CLOSING PROCEDURE

Requests from the public to close and abandon portions of public streets are referred to the Director of Public Works and, in turn, are referred to the Surveys and Mapping Section of the Bureau of Engineering for investigation. Most of these investigations follow a regular routine, but occasionally a case is presented that involves conflicting rights of abutting and adjoining owners and produces a highly interesting controversy.

A recent case was a request to close and abandon the rear portion of a small street 25 feet in width and extending halfway into a block - a cul-de-sac. The petitioner owned the property on both sides of the portion desired to be closed. The City's title consisted merely of an easement and, in the event of an abandonment, the street area would revert to the abutting property owner.

The original opening of the street gave the owner of the rear lot a 25-ft. frontage on the dead end and he used the street as a means of ingress and egress to his property for a long period of time. Becoming aware of his neighbor's petition to close the portion of the street adjacent to his lot, he immediately protested the closing.

In opposing this protest it was argued that when the street was created no land was contributed by the property owner at

the end of the cul-de-sac, nor was he assessed for any part of the street improvements; therefore, no rights over and above those held by the public generally were acquired by said owner on the opening of the street and he had no basis for filing a protest against its closing.

The protestant's argument was that he not only has the right to the use of the street in common with all other members of the public, but that through the use of the street over a period of years he has also acquired a right or easement through usage for the purposes of ingress and egress to and from his property. It was claimed that this right-of-way or easement existed even though he had no fee title to any part of the street area. He further argued that the fact that no assessment was levied against him for the street improvements was a fault of the ordinance covering assessments and not a fault of the property owner.

No decision has yet been reached in this matter.

LABORATORY AND TESTING WORKASPHALT AND CONCRETE

Usual routine inspections of the asphalt and premix concrete plants furnishing asphalt and concrete for City contracts were made at regular intervals. Due to the fact that transportation facilities improved greatly during the past year, the aggregates supplied were more consistent in quality and grading, and therefore better control of asphalt and concrete mixes was possible.

Samples of concrete taken from each pour on the various concrete structures under construction were tested at the 7 and 28 day periods and showed consistent gain in strength, testing well above the requirements of the specifications.

CONCRETE PIPE

The American Concrete Pipe Company of Oakland manufactured and supplied precast concrete pipe of 78-inch inside diameter for the Vicente Outfall sewer contract. The pipe is centrifugally spun in 8-foot lengths with walls 6-1/2 inches thick, reinforced with 7/16-inch wire mesh. An 8-foot section contains approximately 3.55 cu. yds. of concrete and requires 26 sacks of cement. The average compressive strength of the concrete is over 5000 lbs. p.s.i. All pipes were inspected and tested at the plant before shipment to the job.

EARLY HARDENING CONCRETE

Concrete specifications for curbs and parking strips on Guerrero Street called for the use of "one-day cement" to permit prompt access to garages along the line of the improvement. In lieu of "one-day cement," which was not available, calcium chloride was authorized at the rate of two pounds per sack of cement. This admixture worked very satisfactorily and the concrete set rapidly enough to permit automobiles on the parking strip within twenty-four hours.

Calcium chloride was also used in the Class "A" concrete for the precast piles for the Vicente Street outfall sewer. Driving was permitted when the concrete attained a strength of 3500 lbs. p.s.i., which was found to require only five days. The calcium chloride originally was added at the central mixing plant but, due to the long haul and the moisture in the aggregates and sand, the concrete set too fast for the finishers. This was remedied by adding the calcium chloride after the truck reached the job and mixing just before pouring.

### CONCRETE PAVEMENT

Transit mix, using Class "E" concrete with three-inch maximum aggregate, was tried on Clipper Street. A little difficulty was at first experienced in keeping the mix to a uniform slump and a few loads arrived at the job too stiff. After the first day's run, the control was satisfactory and very little trouble was experienced thereafter.

In spite of the cold winds blowing at the time, the finished pavement did not develop any surface cracks. This was probably due to the dissipation of the heat of reaction in transit, resulting in a cooler mix in place as compared with the warmer mix and the continued reaction heating which occur when mixing is done on the job.

### ASPHALTIC CONCRETE PAVEMENT

Asphaltic concrete wearing surfaces placed on Guerrero Street, Clipper Street, and other locations met the requirements of specifications and were very satisfactory, except on trench coverings where narrow shallow strips, laid during cold weather, resulted in the raveling of the surface under traffic.

Samples cut from these sections showed the cause to be lack of compression caused by rapid cooling of the small volume of material thereby reducing workability under the roller.

MISCELLANEOUS

Many miscellaneous samples were tested chemically and physically for the various City departments.

SUMMARY

A summary of the tests made during each of the past two years is shown in the following table.

Laboratory Tests

| <u>Chemical Tests</u>         | <u>1945-46</u> | <u>1946-47</u> |
|-------------------------------|----------------|----------------|
| Public Utilities Commission   | 15             | 12             |
| Purchaser of Supplies         | 10             | 8              |
| San Francisco Fire Department | 20             | 30             |
| Bureau of Engineering         | <u>10</u>      | <u>16</u>      |
|                               | 55             | 66             |
| <u>Physical Tests</u>         |                |                |
| Public Utilities Commission   | 120            | 80             |
| Department of Public Works    | 125            | 110            |
| Purchaser of Supplies         | 40             | 53             |
| San Francisco Fire Department | 150            | 109            |
| Bureau of Engineering         | <u>100</u>     | <u>60</u>      |
|                               | 535            | 412            |
| <u>Concrete Tests</u>         |                |                |
| Public Utilities Commission   | 35             | 72             |
| Park Commission               | 5              | 0              |
| Recreation Department         | 5              | 0              |
| Bureau of Architecture        | 10             | 6              |
| Bureau of Engineering         | <u>300</u>     | <u>682</u>     |
|                               | 355            | 760            |
| <u>Asphalt Tests</u>          |                |                |
| Public Utilities Commission   | 6              | 9              |
| Recreation Department         | 4              | 2              |
| Department of Public Works    | 18             | 80             |
| Bureau of Engineering         | <u>10</u>      | <u>150</u>     |
|                               | 38             | 241            |
| <u>Paint Tests</u>            |                |                |
| Purchaser of Supplies         | 7              | 14             |
| Bureau of Architecture        | 8              | 6              |
| Bureau of Engineering         | <u>15</u>      | <u>18</u>      |
|                               | 30             | 38             |
| <u>Coal Tar Tests</u>         |                |                |
| Public Utilities Commission   | 18             | 28             |
| Bureau of Engineering         | <u>8</u>       | <u>0</u>       |
|                               | 26             | 28             |
| Totals                        | 1039           | 1545           |

SERVICES PERFORMED FOR OTHER BUREAUS AND DEPARTMENTS

The Bureau continued the practice of furnishing technical services to other bureaus within the department and to other departments of the City whenever requested to do so. This was done notwithstanding the heavy design and construction program under way during the past year. The following is a summary of the principal services performed.

For Bureau of Architecture

Designed sewers in the San Francisco Junior College site near Ocean Avenue and Phelan Street.

Assisted in the preparation for filing of 30 applications for priority of materials.

For Bureau of Sewer Repair

Prepared maintenance instructions for operation of Lincoln Way Outfall structure.

Assisted in the preparation for filing of 3 applications for priority of materials.

For Bureau of Street Repair

Made a thorough survey of the dust condition at the Municipal Asphalt Plant in cooperation with the Berkeley office of the State Bureau of Adult Health. Plans and specifications will be prepared by the Bureau of Engineering for necessary equipment needed to correct the excess dust problem.

Made recommendations for decentralizing the power system for operating equipment at the Municipal Asphalt Plant by installing separate power drives for each piece of major equipment.

For Bureau of Building Inspection

Reviewed the proposed new Building Code.

For Fire Department

Prepared plans and specifications and supervised relocation of 18" cast iron sewer in 19th Avenue opposite Denslowe Drive.

Prepared plans and specifications and inspected alterations to and raising of auxiliary water supply pipe lines in Fairfax Avenue, Rankin Street and Napoleon Street.

For Park Commission

Investigated capacity and condition of bridge at Stow Lake.

Made recommendations as to the operation and maintenance of the activated sludge plant in Golden Gate Park.

For Department of Electricity

Prepared estimate of cost of retaining wall support for part of shop building at Golden Gate Avenue.

For Recreation Commission

Prepared plans, specifications, and estimates for flood light pole foundations at North Beach Playground.

Investigated sub-surface water conditions in St. Mary's Playground in area north of Alemany Boulevard.

For California Legion of Honor Commission

Prepared plans, specifications, and estimates, and inspected the construction of a sewer from the Legion of Honor Palace to 34th Avenue and Clement Street and for a fire cistern adjacent to the building.

For Board of Education

Prepared plans and specifications and supervised the relocation of a sewer at the Fairmount School.

For Department of Public Health

Investigated means of disposition of Sanitary Sewage from the Cliff House and Sutro Baths.

Made periodic trips to the Hassler Health Home in San Mateo County to advise on operation and maintenance of sewage treatment plant.

For Sheriff's Office

Made tests at regular intervals throughout the year for control of operation of the activated sludge treatment plant at County Jail #2 in San Mateo County and prepared plans for installation of a new activated sludge recirculating pumping system, complete with pump with 3" suction and 3" recirculation line.

For Juvenile Court Department - Log Cabin Ranch

Plans, specifications, and estimates were prepared for a fire protection system, increased domestic water supply and storage, and a new water main at the Log Cabin Ranch School for Boys located near La Honda in San Mateo County. Since the establishment of the school at this location in 1942, the water supply has proved inadequate for both fire protection and domestic use.

The fire protection system, covering all buildings in both the building site and the farm site, will consist of 2750 lineal feet of 6-inch and 750 lineal feet of 4-inch extra heavy wrapped

steel pipe, and fourteen 4-inch wharf hydrants. Water will be drawn from a small lake in the building site area by means of an engine-driven pump, which can furnish 500 gpm against a total dynamic head of 120 lbs. per sq. in. There will be no cross connections between this system and the domestic water supply system since the lake water is not potable.

The new domestic water supply improvements will include a two-stage centrifugal pump having a capacity of 50 gpm against a total dynamic head of 350 feet, a 20,000 gallon redwood water storage tank, a pump discharge line consisting of 1450 lineal feet of 3-in. galvanized steel pipe, and a new water main consisting of 750 lineal feet of 6-in. asbestos - cement pipe.

The contract for this project was awarded on June 5, 1947, at a cost of \$42,498, excluding the two-stage centrifugal pump, which was purchased under a separate contract at a cost of \$515.

### Inspection

Construction inspectors were assigned at times to the Municipal Railway, Recreation Department, and Water Department.

### Testing

The Laboratory and Testing Section made numerous examinations and tests for other bureaus and departments as indicated below.

|                                 | 1946-47 | 1945-46 |
|---------------------------------|---------|---------|
| Bureau of Architecture          | 12      | 18      |
| Other bureaus of the Department | 190     | 143     |
| Park Department                 | 0       | 5       |
| Public Utilities Commission     | 201     | 194     |
| Purchasing Department           | 75      | 57      |
| Recreation Department           | 2       | 9       |
| Fire Department                 | 139     | 170     |
| Total                           | 619     | 596     |
| Bureau of Engineering           | 926     | 443     |
| Totals of all tests             | 1545    | 1039    |



POST-WAR STATE AID

Applications were made during the fiscal year for State Aid under both the Planning Assistance Act (Chapter 47 Statutes of 1944) and the Construction and Employment Act (Chapter 20 Statutes of 1946). The latter act was amended at the last session of the Legislature (Chapter 140 Statutes of 1947) to permit reimbursement for expenditures made for construction purposes after February 13, 1946. Under the terms of this amendment it became possible for San Francisco to file applications for eight projects which were not previously eligible. The second amendment passed at the same session of the Legislature (Chapter 92 Statutes of 1947) provides that 50 percent of the State's share of the estimated cost of a project may be made as an advance to the local agency. San Francisco has not yet availed itself of this opportunity.

APPLICATIONS FOR PLANNING FUNDS

The 36 applications for planning funds filed during the year 1945-1946 were all approved for the amounts applied for in accordance with the list contained on page 96 of the previous annual report. Four additional applications were filed during the last fiscal year, as listed below, bringing the total number of applications to 40 and the total amount applied for to \$549,230.

Planning Fund Applications - Resol. No. 6440

| <u>State<br/>No.</u> | <u>Project</u>           | <u>Const. Cost<br/>Incl. Plans</u> | <u>Plan Cost<br/>Total</u> | <u>State Half</u> |
|----------------------|--------------------------|------------------------------------|----------------------------|-------------------|
| 831                  | Hyde St. Pumping Station | \$ 86,000                          | \$5,160                    | \$ 2,580          |
| 832                  | 48th Ave. & Fulton St.   | 105,000                            | 6,300                      | 3,150             |
| 833                  | 21st-Florida - 20th Sts. | 71,400                             | 1,400                      | 700               |
| 834                  | Franklin St.             | 136,000                            | 4,000                      | 2,000             |

REIMBURSEMENT FOR PLANNING WORK

By the end of the fiscal year claims for reimbursement had been filed with the State and payments in full had been received

on 18 projects, ten of the payments being final and the remaining eight partial. Included are one final and two partial claims paid during the preceding year in the months of April and June. Table I shows for each of the 18 projects the total amount allocated by the State and the percentage and amount paid to date:

TABLE I  
PLANNING ASSISTANCE APPLICATIONS  
PAYMENTS RECEIVED TO DATE

| <u>State</u><br><u>No.</u> | <u>Project</u>              | <u>Allocation</u> | <u>Payments</u><br><u>%</u> | <u>Received</u><br><u>Amount</u> |
|----------------------------|-----------------------------|-------------------|-----------------------------|----------------------------------|
| 74                         | Lake Merced Dist.           | \$ 39,000.00      | 50                          | \$ 19,500.00                     |
| 75                         | Scott St. Sewer System      | 4,000.00          | 100                         | 4,000.00                         |
| 76                         | Napoleon St.                | 2,500.00          | 100                         | 2,500.00                         |
| 78                         | Upper Army - Sec. A         | 659.26            | 100                         | 659.26                           |
| 79                         | Vicente St. Outfall         | 900.00            | 100                         | 900.00                           |
| 81                         | Lake St. Dist.              | 5,000.00          | 50                          | 2,500.00                         |
| 88                         | 29th St.                    | 1,500.00          | 100                         | 849.26                           |
| 89                         | Pine & Broderick            | 1,500.00          | 100                         | 705.01                           |
| 91                         | 23d St.                     | 1,000.00          | 75                          | 750.00                           |
| 92                         | Hampshire St.               | 800.00            | 100                         | 689.46                           |
| 97                         | Misc. Small Sewers          | 7,500.00          | 100                         | 2,470.00                         |
| 98                         | R. S. S. T. Plant           | 35,000.00         | 100                         | 35,000.00                        |
| 99                         | North Point Plant           | 195,000.00        | 33                          | 63,868.59                        |
| 102                        | Army-San Jose-Guerrero etc. | 11,000.00         | 75                          | 8,250.00                         |
| 103                        | Islais Creek Bridge         | 15,000.00         | 100                         | 11,166.42                        |
| 106                        | 13th St. Market to Bryant   | 6,600.00          | 75                          | 4,950.00                         |
| 108                        | Monterey Blvd.              | 7,127.00          | 50                          | 3,563.50                         |
| 110                        | Mission Viaduct             | <u>5,467.00</u>   | 50                          | <u>2,733.50</u>                  |
| Totals                     |                             | \$339,553.26      |                             | \$165,055.00                     |

It will be noted that in the case of five projects showing 100% payments, the amounts received were less than the amounts allocated by the State. This was due to the fact that the actual

planning costs for these completed projects proved to be somewhat less than originally estimated. The aggregate amount of the allocations not collected for these five projects was \$10,419.85, which amount automatically becomes available for additional planning applications. Four such applications have already been filed, as previously mentioned (Applications Nos. 831, 832, 833, and 834). Table II shows all applications approved by the State and not yet paid in full as of June 30, 1947.

A considerable amount of engineering and clerical work is involved in preparing claims for reimbursement. It is required that the Warrant Number be furnished for all warrants issued by the Controller for personal or contractual services on each project. In the case of payments for personal services, additions of 4% for vacation, 4% for sick leave and 4½% for retirement charges were approved by the Auditors for the State Controller. To cover the cost of drafting materials and supplies a charge of 3½% of the base personal service cost of draftsmen, designers, and engineers was included. No cost of administrative or supervisory engineers, who were regular staff members, was included.

#### APPLICATION FOR LAND ACQUISITION

Under Resolution No. 4843, dated August 1, 1945, the Board of Supervisors authorized an application for State Aid for the purchase of Rights of Way for the Army, San Jose, and Guerrero Street Highway Project. This was designated Request No. 2013 and approved by Resolution No. A-53 of the Post-war Public Works Review Board on January 15, 1947, in the amount of \$249,621.72, being the total of the San Francisco Allotment for Property Acquisition under Chapter 47 Statutes of 1944. The application covers the purchase of 67 parcels of property most of which is improved. A claim in the amount of \$89,474.35 for the purchase of the first 22 parcels is in process of completion.

TABLE II

ACTIVE APPLICATIONS TO STATE FOR PLANNING ASSISTANCEAS OF JUNE 30, 1947

| State<br>No.                 | Project                                          | Construction<br>Cost<br>Inc. Plans | P L A N C O S T |                   |               |
|------------------------------|--------------------------------------------------|------------------------------------|-----------------|-------------------|---------------|
|                              |                                                  |                                    | Total           | After<br>July '44 | State<br>Half |
| <u>SEWERS</u>                |                                                  |                                    |                 |                   |               |
| *74                          | Lake Merced Dist.                                | \$ 2,600,000                       | \$78,000        | \$78,000          | \$39,000      |
| 77                           | Lower Islais Cr.-Alemany                         | 200,000                            | 6,000           | 1,000             | 500           |
| 78                           | Upper Army St. Dist. Sec. C                      | 400,000                            | 12,000          | 680               | 340           |
| 80                           | 18th St. Dist. A, B & C                          | 560,000                            | 17,000          | 4,000             | 2,000         |
| *81                          | Lake St. Dist.                                   | 830,000                            | 30,000          | 10,000            | 5,000         |
| 82                           | Islais Creek Dist.                               | 400,000                            | 12,000          | 12,000            | 6,000         |
| 83                           | Jackson St. Dist.                                | 360,000                            | 10,000          | 10,000            | 5,000         |
| 84                           | Lower Market St. Dist.                           | 460,000                            | 12,000          | 12,000            | 6,000         |
| 85                           | Front & Green St. Dist.                          | 140,000                            | 4,000           | 4,000             | 2,000         |
| 86                           | Commercial St. Dist.                             | 140,000                            | 4,000           | 4,000             | 2,000         |
| 87                           | Ingleside Dist. Secs. B&C                        | 250,000                            | 7,500           | 4,000             | 2,000         |
| 90                           | 14th St., Valencia-Dolores                       | 60,000                             | 2,000           | 2,000             | 1,000         |
| *91                          | 23d St., 3d to Iowa                              | 35,000                             | 2,000           | 2,000             | 1,000         |
| 93                           | 46th Ave. & Lincoln Diver.                       | 35,000                             | 2,000           | 2,000             | 1,000         |
| 94                           | 7th St.-under S.P. tracks                        | 7,000                              | 400             | 400               | 200           |
| 95                           | Hunters Pt. Sewer Exten.                         | 450,000                            | 13,800          | 13,800            | 6,900         |
| 96                           | " " Tunnel                                       | 440,000                            | 13,200          | 13,200            | 6,600         |
| *99                          | No. Pt. Plant & Outfall                          | 6,790,000                          | 390,000         | 390,000           | 195,000       |
| 831                          | Hyde St. Pump. Station                           | 86,000                             | 5,160           | 5,160             | 2,580         |
| 832                          | 48th Ave. & Fulton St.                           | 105,000                            | 6,300           | 6,300             | 3,150         |
| 833                          | 21st-Florida-20th Sts.                           | 71,400                             | 1,400           | 1,400             | 700           |
| 834                          | Franklin St.                                     | 136,000                            | 4,000           | 4,000             | 2,000         |
| SUB-TOTAL - SEWER PROJECTS   |                                                  | \$14,555,400                       | \$632,760       | \$579,940         | \$289,970     |
| <u>HIGHWAYS</u>              |                                                  |                                    |                 |                   |               |
| *102                         | Army. San Jose Ave.-<br>Guerrero & Clipper Proj. | \$1,011,000                        | \$55,000        | \$22,000          | \$11,000      |
| 104                          | Portola Drive                                    | 3,154,000                          | 173,000         | 140,000           | 70,000        |
| 105                          | Broadway Tunnel                                  | 2,500,000                          | 90,000          | 90,000            | 45,000        |
| *106                         | 13th St.-Market-Bryant                           | 220,000                            | 13,200          | 13,200            | 6,600         |
| 107                          | Sixth St. Viaduct                                | 2,700,000                          | 76,000          | 76,000            | 38,000        |
| *108                         | Monterey Blvd.                                   | 245,000                            | 17,500          | 14,255            | 7,127         |
| 109                          | Stanley Underpass                                | 260,000                            | 15,000          | 10,411            | 5,206         |
| *110                         | Reconstr. Mission Viaduct                        | 220,000                            | 14,000          | 10,934            | 5,467         |
| 111                          | Bayshore Perm. Paving                            | 110,000                            | 6,000           | 3,000             | 1,500         |
| SUB-TOTAL - HIGHWAY PROJECTS |                                                  | \$10,420,000                       | \$459,700       | \$379,800         | \$189,900     |
| TOTAL - ALL ACTIVE PROJECTS  |                                                  | \$24,975,400                       | \$1,092,460     | \$959,740         | \$479,870     |

\*Projects on which partial payments have been received.

APPLICATION FOR CONSTRUCTION FUNDS

Under the Construction and Employment Act (Chapter 20 Statutes of 1946) 18 applications have been filed for State Aid, including one (No. 4) filed in the preceding year. The first ten have been approved by the State Allocations Board. The remaining eight, submitted on June 18, 1947, apply to projects which were undertaken by the City prior to the passage of the 1946 Act. They were made eligible by the amendment passed at the last session of the Legislature (Chapter 140 Statutes of 1947). Table III shows the applications filed and the Resolutions of the Board of Supervisors authorizing their submission:

TABLE III  
CONSTRUCTION ASSISTANCE APPLICATIONS  
TO JUNE 30, 1947

| State<br>No. | Project                                               | Amount<br>State's Share | Resolution<br>(Series of 1939) |         |
|--------------|-------------------------------------------------------|-------------------------|--------------------------------|---------|
|              |                                                       |                         | No.                            | Date    |
| 4            | Richmond Sunset Sewage<br>Treatment Plant Enlargement | \$ 461,608.50           | 5604                           | 6/26/46 |
| 25           | Laguna St. Sever                                      | 14,885.00               | 5665                           | 7/9/46  |
| 26           | Seventh St. Outfall                                   | 4,200.00                | "                              | "       |
| 27           | 23d St., 3d to Iowa St.                               | 23,200.00               | "                              | "       |
| 28           | Lake St. District Sec. "A"                            | 150,000.00              | "                              | "       |
| 29           | 46th Ave., and Lincoln Way<br>Diversion               | 19,150.00               | "                              | "       |
| 31           | Vicente St. Outfall                                   | 69,500.00               | "                              | "       |
| 31a          | Vicente Outfall (Supplemental)                        | 25,000.00               | 6362                           | 3/25/47 |
| 285          | Caselli Avenue                                        | 32,000.00               | 6405                           | 4/9/47  |
| 321          | Aleman, Section "G"                                   | 129,000.00              | 6439                           | 4/21/47 |
| 429          | St. Charles Avenue                                    | 10,975.00               | 6628                           | 6/18/47 |
| 430          | Lake Merced, Section "A"                              | 92,000.00               | "                              | "       |
| 431          | Upper Army, Section "A"                               | 44,000.00               | "                              | "       |
| 432          | Scott St. Section "BC AD"                             | 360,000.00              | "                              | "       |
| 433          | Hampshire St.                                         | 19,500.00               | "                              | "       |
| 434          | Army-San Bruno Ave. to Potrero                        | 41,500.00               | "                              | "       |
| 435          | Ingleside, Section "B"                                | 63,125.00               | "                              | "       |
| 436          | Baker Street Outfall                                  | 24,250.00               | "                              | "       |
| Total        |                                                       | \$1,583,893.50          |                                |         |

The total allocation to San Francisco under the Construction and Employment Act is \$8,357,462.76 of which \$398,383.79 must be used for street improvements and will be applied to the Islais Creek Bridge. The balance of \$7,959,078.97 will be used entirely for sewers and sewage disposal works. Additional applications will be filed as further projects of those types are undertaken.

#### REIMBURSEMENT FOR CONSTRUCTION PROJECTS

Three claims for construction cost reimbursement have been paid by the State, consisting of a final payment on the Laguna Street Sewer and two partial payments on the Richmond-Sunset Sewage Treatment Plant Enlargement as indicated below:

| <u>State No.</u> | <u>Project</u>              | <u>Amt. Paid</u>  | <u>Date Paid</u> |
|------------------|-----------------------------|-------------------|------------------|
| 25               | Laguna Street Sewer (final) | \$ 14,885.00      | March 21, 1947   |
| 4                | R.S.S.T.P. to Dec. 31, 1946 | 23,320.55         | March 26, 1947   |
| 4                | R.S.S.T.P. to Mar. 31, 1947 | <u>109,432.10</u> | April 24, 1947   |
|                  | Total paid to June 30, 1947 | \$147,637.65      |                  |

#### SUMMARY OF STATE FUNDS RECEIVED

Reimbursement received from the State on both planning and construction projects and the City accounts to which they have been credited are summarized below:

| <u>Account</u>                | <u>Planning Receipts</u> | <u>Construction Receipts</u> |
|-------------------------------|--------------------------|------------------------------|
| 1944 Sewer Bond Fund          | \$134,391.58             | \$147,637.65                 |
| Special Gas Tax Fund          | 16,763.50                |                              |
| Special Road Improvement Fund | 11,166.42                |                              |
| State Highway Trust Fund      | <u>2,733.50</u>          |                              |
| Totals                        | \$165,055.00             | \$147,637.65                 |

### GARBAGE DISPOSAL

San Francisco's garbage and refuse were disposed of during the past year by the sanitary fill method following the same general procedure which has been in effect since 1932. Increasing amounts of refuse are being delivered direct to the fill by truck as compared with previous years, but over 85 percent is still going by rail from the loading platform at 6th and 16th Streets. The filling operation is continuing in a southerly direction, the total area of the fill now being approximately 93 acres.

### SUBSIDENCE OF FILL

In April 1946, elevations were taken at various bench marks within the fill area which had been established in March 1944, in order to determine the amount of subsidence during the two-year period. The results were quite erratic. In that particular part of the fill deposited in 1933 and 1934, the two-year subsidence ranged from 0.14 to 0.37 feet, but in areas filled after 1934 and up to 1940, the two-year subsidence varied from 0.58 to 3.88 feet. There was no apparent relationship between the amount of subsidence and the age of the fill.

In December 1946 additional bench marks were placed throughout the filled area for later use in measuring future subsidence.

### UTILIZATION OF THE AREA

During the past year the Southern Pacific Company, which owns the sanitary fill area, has leased approximately 20 acres of the area to four industrial concerns which are planning immediate improvements. One of them, a lumber company, has already paved an area of 8-1/2 acres and is using it for lumber storage.

### NEW FRANCHISE PROVISIONS

Operations at the sanitary fill were conducted without any official sanction from the City from December 3, 1945 to September

24, 1946. On the latter date the Board of Supervisors, by Ordinance No. 4040 (Series of 1939) granted a franchise to the Sanitary Fill Company permitting it to continue operations at the same site for an additional period of 20 years. The salient points of the new franchise are briefly summarized below:

1. After 10 years either the company or the City may terminate the franchise by giving one year's written notice.
2. The company may charge \$1.10 per ton (previous rate was \$1.00 per ton) for the disposal of garbage and refuse delivered at the loading platform at 6th and 16th Streets.
3. If the Southern Pacific Company should discontinue railroad service, then the company may charge 90¢ per ton for garbage and refuse delivered by truck at the sanitary fill.
4. No garbage or refuse shall be kept at the loading platform longer than 24 hours.
5. After delivery of the garbage or refuse at the site, the company shall dispose of it in accordance with sound engineering practice by placing, spreading, and covering it with earth, rock, or sand. The depth and shape of the fill shall depend upon the elevation, grade, and location of the particular part of the site being filled. At the end of each day all garbage and refuse placed shall be covered in accordance with sound engineering practice and the prior experience of the company. A seal shall be maintained each day and the City Engineer may order additional material and work to obtain the seal.
6. Garbage and refuse shall be handled so as to avoid creation of a nuisance. No fires shall be allowed on the site and a water supply shall be provided for fire suppression.
7. Mud from the Bay shall not be used for cover material unless proved to the Health Authorities that no nuisance will be created. If necessary to dump in water, a suitable boom shall be placed to prevent the escape of floating material into the Bay. Pools of water containing organic matter shall not be allowed to collect on the dump or elsewhere, and all water shall be drained into suitable channels and be discharged into adequate bodies of diluting water. There shall be no rats, flies, noxious odors, or nuisances, and the Director of Public Health of the City may order proper means instituted to diminish the rat population.
8. Railroad cars, after unloading, shall be swept inside and, if necessary, outside.
9. A suitable burner which will not yield offensive odors shall be provided if it is desired to burn boxes, wood or other combustible material at the disposal site.
10. The disposal site is to be under the constant inspection of the City Engineer and the City shall have the right to make such tests as may be necessary to see that all requirements are met.
11. Company shall pay to the City \$4,800 per year for inspection fees.



12. Company shall handle all refuse collected by the street cleaning division of the City and all sand collected in the City's sewage treatment plants, delivered at the receiving point, without charge to the City.

13. Company shall furnish annual financial statements to the City Controller.

#### NEW COLLECTION RATES

At an election held November 5, 1946, an amendment to the basic law of 1932 was voted by the people increasing the rates of collection for residences and flats by amounts varying from 10 to 45%. The rate was not increased on apartment houses. Other parts of the previous act were changed only in a few minor details.

#### COMPARISON OF STATISTICS FOR CALENDAR YEARS 1945 & 1946

(From Records & Financial Statements of Sanitary Fill Company)

|                                                      | Calendar Year<br>1946 | Calendar Year<br>1945 |
|------------------------------------------------------|-----------------------|-----------------------|
| Total Income                                         | \$258,125.87          | \$264,496.60          |
| Expenses                                             |                       |                       |
| Operation                                            | \$165,900.58          | \$158,231.36          |
| Freight                                              | 58,429.88             | 50,593.11             |
| Administration & Inspection                          | 38,302.99             | 41,378.13             |
| Total Expense                                        | \$262,633.45          | \$250,202.60          |
| Tons, Garbage & Refuse handled                       | 271,314.66            | 250,203.00            |
| Cost per ton                                         | \$ .968               | \$ .885               |
| Yards earth cover                                    | 153,140               | 131,010               |
| **Cost earth cover                                   | \$66,324.91           | \$57,692              |
| Cost per yard of earth cover                         | \$ .433               | \$ .440               |
| Cu.yds. earth cover per ton<br>garbage and refuse    | .564                  | .463                  |
| *Depth of garbage & refuse for<br>2 feet of earth    | 5.43                  | 6.17                  |
| Number of truckloads delivered<br>direct to the fill | 11,786                |                       |
| Number of carloads to fill from<br>loading platform  | 13,933                |                       |
| Number of carloads to fill from<br>elsewhere         | 299                   |                       |

\*Based on assumption that garbage after placing, covering, and compacting weighs 1400 lbs. per cu.yd. against 700 lbs. as assumed for weight of garbage.

\*\*On site costs only.

SEWAGE PUMPING STATIONSEXISTING PUMPING STATIONS

The sewerage system of San Francisco includes at the present time nine pumping stations, one of which forms a part of the Richmond-Sunset Sewage Treatment Plant and is operated by the sewage plant staff. The remaining eight stations are operated under the supervision of the Electrical Section of the Division of Design. The accompanying Table I lists these eight pumping stations and gives pertinent information as to their size, capacity, approximate cost, and function. Details of the operation of the Richmond-Sunset Station are included in the description of the operation of the treatment plant.

The pumping stations are located in low-lying areas of the City which cannot be drained by gravity into existing main sewers. Their capacities are sufficient to handle all sanitary sewage and, in addition, to take care of a portion of rainfall run-off in order to prevent pollution of shore waters by the first scourings from the streets. Generally the stations are provided with overflow spillways so that run-off beyond the capacity of the station is discharged directly into the ocean or bay. In most cases the stations have sufficient capacities so that at least one pumping unit can be shut down to permit repairs.

All of the pumping stations have automatic float controls. At two of the larger stations, namely Marina and Commercial, operators are on duty during two eight-hour shifts per day to perform necessary maintenance work and make required adjustments. At each of two other stations, namely Sea Cliff No. 2 and Parkmerced, an operator is on duty for a single shift each day. The operating staff during the year included:

- 1 Electrical Engineering Inspector
- 2 Operating Engineers
- 4 Junior Operating Engineers

REPAIRS AND REPLACEMENTS

During the past fiscal year, in addition to the routine maintenance repairs and replacements, the following major repairs and improvements were made at the stations indicated:

Marina Station

All five pumps were overhauled during the fiscal year. The three two-speed pumps were removed to the machine shop where the casings were machined and fitted with new bronze casing liners. The bronze wearing rings on all the pumps were renewed as well as the pump bearings. The impellers were all checked and re-balanced.

Commercial Street Station

Certain parts of the fresh water lines within the station and the service line from the water meter to the station were found to be badly corroded, and were renewed during the year.

Sea Cliff Station No. 2

A chain-link fence was installed along the sidewalk between adjacent houses for inclosing the lot in front of the station. This was found necessary in order to keep the lot free of rubbish and in proper condition.

Parkmerced Station

The drainage pipe underneath the entrance ramp for rainfall run-off which was installed when the station was built was found to be inadequate to carry the heavier run-offs and as a result the water would often back up and enter the station, causing considerable trouble and some damage. This condition was corrected during the year by increasing the height of the concrete wall around the entrance steps by approximately two feet. The entrance ramp was sloped from the top of the new wall to the street pavement.

A double wall partition and door were installed within the station for the purpose of separating the control and pump rooms and thus isolate the pump room noises as well as eliminating unnecessary drafts.

Two ventilating louvres were installed in the sump room to

provide for additional ventilation found to be necessary.

#### Fitzgerald Station

After this station was built several years ago by the National Housing Authority it became apparent that the station, because of its low elevation and inadequate overflow facilities, was subject to flooding during heavy rains or power shut-downs. In order to prevent damage to the pump motor during such flooding, the motor base was raised and shaft extended so as to place the motor two feet above the operating floor level. The new 15 h.p., 1150 r.p.m., 475 gpm pump unit, contracted for during the latter part of the fiscal year 1945-46, was installed during this fiscal year and placed in operation.

#### SAFETY GUARDS

To comply with the requirements of the State Industrial Accident Commission, safety guards for equipment were designed for Parkmerced, Commercial St., Sea Cliff No. 2, and Vicente Stations and will be installed at an early date.

#### NEW STATIONS

##### Hyde St. Station

Plans and specifications were completed and bids requested for the construction of the Hyde St. Sewage Pumping Station which is to be located on the southwest corner of Jefferson and Hyde Streets. This station is one of the final units of the program to remove sewage pollution along the north shore line particularly at Aquatic Park, one of San Francisco's popular recreational beaches.

The sanitary area tributary to the proposed station comprises 14 acres and is bounded on the north by San Francisco Bay, on the south by Beach St., on the west by Larkin St., and on the east by Jones St. The sewage will be pumped into the present gravity system which is tributary to the proposed North Point Sewage Treatment Plant.

No full time attendant will be needed since the equipment will be fully automatic in operation. There will be two pumps each one having sufficient capacity to handle .02" per hour of rainfall in addition to the sanitary flow.

#### 48th Ave. & Fulton St. Station

Plans and specifications have been completed for the reconstruction of an old underground pumping station at 48th Avenue and Fulton Street. When this work is done, sewage from the extreme westerly portion of the Richmond District, which now flows untreated into the Mile Rock Sewer and thence to the Golden Gate, will be diverted into the new plant and then pumped into a gravity sewer leading to the Richmond-Sunset Sewage Treatment Plant.

The tributary area comprises 87 acres and is bounded on the north by the Presidio, on the south by Fulton St., on the west by the Great Highway and on the east by 46th Avenue. This station will be fully automatic in operation and designed so that each of its two pumps will be capable of handling storm run-off of .02" per hour in addition to the normal sanitary flow.

#### OPERATING RECORDS

Tables II to X, inclusive, contain operating records on a monthly basis for each of the pumping stations in service during the past year, except the plant located at the Richmond-Sunset Sewage Treatment Plant, the report on which is included in the report on operations of the treatment plant.

TABLE I  
SEWAGE PUMPING STATION CAPACITIES, ETC.

| Name of Station & Location           | Units   | Type                                                                           | Size of Pump     |           | Total Capacity | Rated Horse Power | Rated Voltage        | Rated Speed R.P.M. | Year Built           | Approx. Contract Cost | Sewage is Pumped into                                          |
|--------------------------------------|---------|--------------------------------------------------------------------------------|------------------|-----------|----------------|-------------------|----------------------|--------------------|----------------------|-----------------------|----------------------------------------------------------------|
|                                      |         |                                                                                | Discharge Inches | Head Ft.  |                |                   |                      |                    |                      |                       |                                                                |
| Marina nr Casa Way                   | 4<br>1  | Horizontal<br>Single Stage                                                     | 10<br>10         | 70<br>34  | 4350<br>2600   | 100/60<br>30      | 440<br>440           | 870/695<br>870     | 1937                 | \$140,000             | N. Pt. Outfall from Pierce St. Sever                           |
| Park Merced                          | 2       | 2-Horizontal Single Stage Pumps in Series                                      | 6                | 131       | 1800           | 50                | 440                  | 1170               | 1944                 | 50,000                | Eucalyptus Dr. Sever from Stanley St. Diversion                |
| Lake Merced Blvd.                    |         |                                                                                |                  | 144       | 2500           |                   |                      |                    |                      |                       |                                                                |
| Commercial St. nr Drumm St.          | 3<br>1  | Vertical Single Stage Horizontal                                               | 6                | 20        | 2100           | 25                | 220                  | 870                | 1905<br>1908<br>1935 | 20,000<br>10,000      | N. Pt. Main from District nr Lcver                             |
| Sea Cliff #2 nr Sea Cliff Drive      | 2<br>1  | Horizontal Single Stage Pumping unit 2-horizontal Single Stage Pumps in series | 4<br>4           | 29<br>100 | 1050<br>650    | 15<br>25          | Engine Driven<br>220 | 1600<br>1750       | 1945                 | 3,550                 | Market St. Richmond-Sunset Sever Tunnel at 25th Ave & Lake St. |
| Vicente at Ot. Highway               | 2       | Vertical Single stage                                                          | 5                | 140       | 1400           | 40                | 220                  | 1150               | 1940                 | 57,500                | Sunset Interceptor from Dist. nr Sloat Blvd. & Ot. Highway     |
| Fitzgerald nr Griffith St.           | *1<br>1 | Vertical Single Stage Ditto                                                    | 4<br>4           | 47<br>54  | 350<br>460     | 15<br>15          | 220<br>220           | 1750<br>1165       |                      | 20,000                | Bayview Main from Shore Area                                   |
| Sea Cliff #1 nr Sea Cliff Dr.        | *2      | Vertical Single Stage                                                          | 4                | 51        | 530            | 15                | 220                  | 1150               | 1929                 | 1,750                 | Sea Cliff Sta. #2 from China Beach Area                        |
| Epine Lake nr Crestlake & Wavona Drs | *1      | Vertical Single Stage                                                          | 3                | 57        | 170            | 5                 | 220                  | 1750               | 1944                 | 1,500                 | Sunset Interceptor from Pinelake Park                          |

\*Temporary station. \*Submerged pump. All pumps are centrifugal type, motor driven - unless otherwise noted.

TABLE II

MARINA SEWAGE PUMPING STATION

CONTRIBUTING POPULATION - 63,000      DISTRICT AREA - 1,025 ACRES  
AVERAGE NET OPERATING HEAD - 38.0 FT.

| Month             | PUMPAGE IN MILLION GALLONS: |                       |                    |                    | Million<br>Foot<br>Gallons<br>per<br>Month | Power - K.W.H.                    |                                                  | K.W.H.<br>per<br>Million<br>foot<br>Gallons |
|-------------------|-----------------------------|-----------------------|--------------------|--------------------|--------------------------------------------|-----------------------------------|--------------------------------------------------|---------------------------------------------|
|                   | Total<br>per<br>Month       | Daily<br>Aver-<br>age | Max.<br>per<br>Day | Min.<br>per<br>Day |                                            | Consumed<br>By Pumps<br>per Month | Consumed<br>by Lights<br>& Auxil's.<br>Per Month |                                             |
| July, 1946        | 138.9                       | 4.480                 | 6.113              | 3.030              | 5240.0                                     | 26620.0                           | 2554                                             | 5.07                                        |
| Aug.              | 177.5                       | 5.725                 | 6.300              | 4.500              | 6749.0                                     | 33600.0                           | 2637                                             | 4.98                                        |
| Sept.             | 174.9                       | 5.825                 | 7.175              | 4.537              | 6635.0                                     | 33150.0                           | 2818                                             | 4.98                                        |
| Oct.              | 182.7                       | 5.890                 | 6.775              | 3.763              | 6925.0                                     | 34575.0                           | 2835                                             | 4.97                                        |
| Nov.              | 168.1                       | 5.600                 | 7.875              | 4.986              | 6385.0                                     | 31900.0                           | 2852                                             | 4.98                                        |
| Dec.              | 165.8                       | 5.350                 | 7.075              | 4.512              | 6300.0                                     | 31450.0                           | 2872                                             | 4.98                                        |
| Jan., 1947        | 180.9                       | 5.835                 | 7.350              | 4.238              | 6875.0                                     | 34325.0                           | 2856                                             | 4.98                                        |
| Feb.              | 175.8                       | 6.280                 | 7.875              | 5.100              | 6680.0                                     | 33310.0                           | 2709                                             | 4.98                                        |
| Mar.              | 182.8                       | 5.900                 | 7.225              | 3.500              | 6936.0                                     | 34590.0                           | 2872                                             | 4.97                                        |
| Apr.              | 183.9                       | 6.135                 | 7.862              | 4.548              | 7000.0                                     | 34800.0                           | 2820                                             | 4.97                                        |
| May               | 171.7                       | 5.550                 | 7.862              | 4.525              | 6520.0                                     | 32575.0                           | 2816                                             | 4.98                                        |
| June              | 182.9                       | 6.085                 | 7.263              | 4.175              | 6938.0                                     | 34600.0                           | 2510                                             | 4.99                                        |
| Total<br>Per Year | 2085.9                      | 5.721                 | { Daily<br>Average |                    | 79183.0                                    | 395495.0                          | 33151.0                                          | 4.98<br>(Average)                           |

Average Overall Efficiency of each Pump and its Motor = 63%

TABLE III  
COMMERCIAL STREET SEWAGE PUMPING STATION

| CONTRIBUTING POPULATION - 14,000  |                       |                  |                    | DISTRICT AREA - 92.5 ACRES |                                            |                                                        |                                               |
|-----------------------------------|-----------------------|------------------|--------------------|----------------------------|--------------------------------------------|--------------------------------------------------------|-----------------------------------------------|
| AVERAGE OPERATING HEAD - 20.0 FT. |                       |                  |                    |                            |                                            |                                                        |                                               |
| PUMPAGE IN MILLION GALLONS:       |                       |                  |                    |                            |                                            |                                                        |                                               |
| Month                             | Total<br>per<br>Month | Daily<br>Average | Max.<br>per<br>Day | Min.<br>per<br>Day         | Million<br>Foot<br>Gallons<br>Per<br>Month | Pover - K.W.H.<br>Consumed<br>by Pumps<br>Per<br>Month | K. W. H.<br>per<br>Million<br>foot<br>Gallons |
| July, 1946                        | 25.07                 | .81              | 1.05               | .67                        | 500.7                                      | 3562.0                                                 | 7.12                                          |
| Aug.                              | 25.27                 | .82              | 1.25               | .78                        | 505.4                                      | 3600.0                                                 | 7.13                                          |
| Sept.                             | 25.21                 | .84              | 1.12               | .73                        | 504.2                                      | 3510.0                                                 | 6.96                                          |
| Oct.                              | 23.16                 | .75              | .89                | .70                        | 463.2                                      | 3232.0                                                 | 6.97                                          |
| Nov.                              | 23.41                 | .78              | 1.12               | .62                        | 468.2                                      | 3292.0                                                 | 7.03                                          |
| Dec.                              | 24.48                 | .79              | 1.16               | .55                        | 488.6                                      | 3502.0                                                 | 7.18                                          |
| Jan., 1947                        | 23.68                 | .76              | .94                | .71                        | 472.6                                      | 3300.0                                                 | 6.99                                          |
| Feb.                              | 21.11                 | .75              | 1.01               | .69                        | 422.2                                      | 2902.0                                                 | 6.88                                          |
| Mar.                              | 22.72                 | .73              | 1.26               | .70                        | 454.4                                      | 3172.0                                                 | 6.98                                          |
| Apr.                              | 20.74                 | .70              | .92                | .66                        | 414.8                                      | 2853.0                                                 | 6.88                                          |
| May                               | 21.13                 | .68              | .85                | .54                        | 422.6                                      | 2906.0                                                 | 6.90                                          |
| June                              | 19.79                 | .66              | .85                | .61                        | 395.8                                      | 2720.0                                                 | 6.90                                          |
| Total<br>Per Year                 | 275.77                | .76              | { Daily<br>Average |                            | 5512.7                                     | 38551.0                                                | 6.99<br>(Average)                             |

Average Overall Efficiency of Each Pump and Motor = 44.8%



TABLE IV  
SEACLIFF SEWAGE PUMPING STATION NO. 1

| CONTRIBUTING POPULATION - 50 |                 | DISTRICT AREA - 4 ACRES          |                    |                                            |                             |                                   |
|------------------------------|-----------------|----------------------------------|--------------------|--------------------------------------------|-----------------------------|-----------------------------------|
|                              |                 | AVERAGE OPERATING HEAD 49.0 FEET |                    |                                            |                             |                                   |
| PUMPAGE IN MILLION GALLONS:  |                 | Million foot Gallons Per Month   |                    | Power - K.W.H. Consumed by Pumps Per Month |                             | K. W. H. per Million foot Gallons |
| Month                        | Total per Month | Daily Average                    | Max. per Day       | Min. per Day                               | Consumed by Pumps Per Month |                                   |
| July, 1946                   | .0551           | .0018                            | Data Not Available |                                            | 18.0                        | 6.55                              |
| Aug.                         | .0499           | .0016                            |                    |                                            | 15.0                        | 6.68                              |
| Sept.                        | .0567           | .0019                            |                    |                                            | 19.0                        | 6.70                              |
| Oct.                         | .0761           | .0025                            |                    |                                            | 25.0                        | 6.58                              |
| Nov.                         | .0740           | .0025                            |                    |                                            | 24.3                        | 6.57                              |
| Dec.                         | .0658           | .0021                            |                    |                                            | 22.0                        | 6.68                              |
| Jan., 1947                   | .0668           | .0022                            |                    |                                            | 22.0                        | 6.58                              |
| Feb.                         | .0772           | .0028                            |                    |                                            | 25.7                        | 6.66                              |
| March                        | .0819           | .0026                            |                    |                                            | 27.0                        | 6.58                              |
| April                        | .0693           | .0023                            |                    |                                            | 23.0                        | 6.63                              |
| May                          | .0651           | .0021                            |                    |                                            | 22.0                        | 6.75                              |
| June                         | .0499           | .0017                            |                    |                                            | 16.5                        | 6.63                              |
| Total Per Year               | .7878           | .0022                            | { Daily Average    |                                            | 259.5                       | 6.44 (Average)                    |
|                              |                 |                                  |                    |                                            | 39.140                      |                                   |

Average Overall Efficiency of Vach Pump and Motor - 46.5%

TABLE V  
SEACLIFF SEWAGE PUMPING STATION NO. 2

CONTRIBUTING POPULATION - 2400

DISTRICT AREA - 83.4 ACRES

AVERAGE OPERATING HEAD 94.0 FEET

| PUMPAGE IN MILLION GALLONS: |                       |                       |                    |                    | Million<br>Foot<br>Gallons<br>Per<br>Month |        | Power - K.W.H.<br>Consumed<br>by Pumps<br>Per<br>Month |       | K. W. H.<br>per<br>Million<br>Foot<br>Gallons |                   |
|-----------------------------|-----------------------|-----------------------|--------------------|--------------------|--------------------------------------------|--------|--------------------------------------------------------|-------|-----------------------------------------------|-------------------|
| Month                       | Total<br>per<br>Month | Daily<br>Aver-<br>age | Max.<br>Per<br>Day | Min.<br>Per<br>Day |                                            |        |                                                        |       |                                               |                   |
| July, 1946                  | 3.94                  | .127                  | .174               | .106               |                                            | 372.0  | 2245.0                                                 | 515   |                                               | 6.02              |
| Aug.                        | 3.98                  | .129                  | .145               | .120               |                                            | 375.0  | 2272.0                                                 | 608   |                                               | 6.07              |
| Sept.                       | 4.35                  | .145                  | .187               | .121               |                                            | 410.0  | 2490.0                                                 | 770   |                                               | 6.07              |
| Oct.                        | 4.73                  | .153                  | .276               | .139               |                                            | 445.0  | 2695.0                                                 | 1085  |                                               | 6.05              |
| Nov.                        | 4.85                  | .162                  | .283               | .131               |                                            | 457.0  | 2770.0                                                 | 1390  |                                               | 6.06              |
| Dec.                        | 4.87                  | .157                  | .433               | .105               |                                            | 460.0  | 2772.0                                                 | 1368  |                                               | 6.04              |
| Jan., 1947                  | 4.14                  | .134                  | .289               | .131               |                                            | 390.0  | 2360.0                                                 | 1440  |                                               | 6.05              |
| Feb.                        | 3.77                  | .135                  | .357               | .122               |                                            | 355.0  | 2165.0                                                 | 955   |                                               | 6.10              |
| Mar.                        | 5.60                  | .181                  | .443               | .136               |                                            | 528.0  | 3200.0                                                 | 980   |                                               | 6.05              |
| Apr.                        | 4.37                  | .145                  | .235               | .133               |                                            | 412.0  | 2490.0                                                 | 950   |                                               | 6.05              |
| May                         | 4.49                  | .145                  | .315               | .132               |                                            | 424.0  | 2560.0                                                 | 840   |                                               | 6.04              |
| June                        | 4.64                  | .154                  | .357               | .131               |                                            | 435.0  | 2648.0                                                 | 592   |                                               | 6.08              |
| Total<br>Per Year           | 53.74                 | .146                  | Daily<br>(Average) |                    |                                            | 5063.0 | 30667.0                                                | 11493 |                                               | 6.06<br>(Average) |

TABLE VI

PARKMERCEDED SEWAGE PUMPING STATION

CONTRIBUTING POPULATION - 7,500      DISTRICT AREA - 83.4 ACRES  
 AVERAGE OPERATING HEAD - 123.0 FT.

| Month          | PUMPAGE IN MILLION GALLONS: |               |                 | Million Foot Gallons |           | Power - K.W.H.              |                                          | K. W. H. per Million foot Gallons |
|----------------|-----------------------------|---------------|-----------------|----------------------|-----------|-----------------------------|------------------------------------------|-----------------------------------|
|                | Total per Month             | Daily Average | Max. Per Day    | Min. Per Day         | Per Month | Consumed by Pumps Per Month | Consumed by Lights & Auxil'is. Per Month |                                   |
| July, 1946     | 11.02                       | .355          | .484            | .261                 | 1355.5    | 7435.0                      | 2085.0                                   | 5.48                              |
| Aug.           | 10.96                       | .354          | .403            | .296                 | 1348.1    | 7400.0                      | 2200.0                                   | 5.50                              |
| Sept.          | 10.62                       | .354          | .414            | .253                 | 1306.3    | 7170.0                      | 2230.0                                   | 5.50                              |
| Oct.           | 10.91                       | .352          | .479            | .210                 | 1341.9    | 7364.0                      | 2356.0                                   | 5.48                              |
| Nov.           | 10.86                       | .362          | .934            | .144                 | 1355.8    | 7344.0                      | 2356.0                                   | 5.50                              |
| Dec.           | 10.79                       | .348          | .927            | .158                 | 1321.2    | 7285.0                      | 2455.0                                   | 5.51                              |
| Jan., 1947     | 11.41                       | .368          | .717            | .296                 | 1403.4    | 7700.0                      | 2400.0                                   | 5.50                              |
| Feb.           | 9.94                        | .352          | .524            | .131                 | 1222.6    | 6710.0                      | 2310.0                                   | 5.48                              |
| Mar.           | 11.66                       | .376          | .622            | .145                 | 1434.8    | 7855.0                      | 2165.0                                   | 5.50                              |
| Apr.           | 12.21                       | .407          | .482            | .333                 | 1501.8    | 8195.0                      | 1825.0                                   | 5.46                              |
| May            | 12.65                       | .408          | .635            | .328                 | 1556.0    | 8530.0                      | 1770.0                                   | 5.47                              |
| June           | 11.69                       | .389          | .489            | .106                 | 1437.8    | 7875.0                      | 1745.0                                   | 5.48                              |
| Total Per Year | 133.72                      | .369          | { Daily Average |                      | 16565.2   | 90863.0                     | 25897                                    | 5.49 (Average)                    |

Average Overall Efficiency of Each Pump and Motor = 56.8%

TABLE VII  
VICENTE SEWAGE PUMPING STATION

| CONTRIBUTING POPULATION - 1,950  |                       |                  |                    | DISTRICT AREA - 51.4 ACRES |                                            |                          |                                      |
|----------------------------------|-----------------------|------------------|--------------------|----------------------------|--------------------------------------------|--------------------------|--------------------------------------|
| AVERAGE OPERATING HEAD 56.0 FEET |                       |                  |                    |                            |                                            |                          |                                      |
| PUMPAGE IN MILLION GALLONS:      |                       |                  |                    | Power - K.W.H.             |                                            |                          |                                      |
| Month                            | Total<br>Per<br>Month | Daily<br>Average | Max.<br>Per<br>Day | Min.<br>Per<br>Day         | Million<br>foot<br>Gallons<br>per<br>Month | Consumed                 |                                      |
|                                  |                       |                  |                    |                            |                                            | By Pumps<br>Per<br>Month | By Lights<br>& Auxil's.<br>Per Month |
| July, 1946                       | 4.71                  | .152             | .162               | .119                       | 263.8                                      | 1853.0                   | 47.0                                 |
|                                  | 4.42                  | .143             | .162               | .124                       | 247.5                                      | 1745.0                   | 45.0                                 |
|                                  | 4.72                  | .157             | .178               | .124                       | 264.3                                      | 1862.0                   | 48.0                                 |
|                                  | 4.44                  | .143             | .150               | .124                       | 248.6                                      | 1754.0                   | 45.0                                 |
|                                  | 4.14                  | .138             | .151               | .124                       | 231.8                                      | 1633.0                   | 42.0                                 |
| 1947                             | 3.53                  | .114             | .162               | .092                       | 197.7                                      | 1394.0                   | 36.0                                 |
|                                  | 3.48                  | .112             | .135               | .103                       | 194.9                                      | 1375.0                   | 35.0                                 |
|                                  | 3.24                  | .116             | .146               | .108                       | 181.4                                      | 1277.0                   | 32.0                                 |
|                                  | 4.23                  | .137             | .178               | .113                       | 236.9                                      | 1667.0                   | 43.0                                 |
|                                  | 4.49                  | .150             | .167               | .119                       | 251.4                                      | 1775.0                   | 45.0                                 |
|                                  | 4.49                  | .145             | .162               | .081                       | 251.4                                      | 1774.0                   | 45.0                                 |
|                                  | 4.42                  | .147             | .189               | .135                       | 247.5                                      | 1745.00                  | 42.0                                 |
|                                  |                       |                  |                    |                            |                                            |                          |                                      |
| Total<br>Per Year                | 50.31                 | .138             | { Daily<br>Average |                            | 2817.2                                     | 19854.0                  | 506.0                                |
|                                  |                       |                  |                    |                            |                                            |                          | 7.06<br>(Average)                    |

Average Overall Efficiency of Each Pump and Motor = 44.5%

TABLE VIII  
FITZGERALD SEWAGE PUMPING STATION

| CONTRIBUTING POPULATION - 800 |  | DISTRICT AREA - 30 ACRES         |               |                 |  |                   |        |                             |  |                                |                          |
|-------------------------------|--|----------------------------------|---------------|-----------------|--|-------------------|--------|-----------------------------|--|--------------------------------|--------------------------|
|                               |  | AVERAGE OPERATING HEAD 48.0 FEET |               |                 |  |                   |        |                             |  |                                |                          |
|                               |  | PUMPAGE IN MILLION GALLONS:      |               |                 |  | Million foot      |        | Power - K.W.H.              |  | K. W. H.                       |                          |
|                               |  | Max. Per Day                     |               | Min. Per Day    |  | Gallons per Month |        | Consumed By Pumps Per Month |  | By Lights & Auxil's. Per Month |                          |
| Month                         |  | Total                            | Daily Average |                 |  |                   |        |                             |  |                                | Per Million Foot Gallons |
| July, 1946                    |  | 2.06                             | .066          | .057            |  | 98.88             | 745.0  | 6.0                         |  |                                | 7.53                     |
| Aug.                          |  | 2.05                             | .066          | .055            |  | 98.40             | 742.0  | 6.0                         |  |                                | 7.57                     |
| Sept.                         |  | 1.89                             | .063          | .057            |  | 90.72             | 682.0  | 5.0                         |  |                                | 7.50                     |
| Oct.                          |  | 1.83                             | .059          | .059            |  | 87.84             | 660.0  | 6.0                         |  |                                | 7.53                     |
| Nov                           |  | 2.10                             | .070          | .059            |  | 100.80            | 760.0  | 5.0                         |  |                                | 7.52                     |
| Dec.                          |  | 2.04                             | .066          | .048            |  | 97.92             | 736.0  | 6.0                         |  |                                | 7.53                     |
| Jan., 1947                    |  | 2.00                             | .065          | .053            |  | 96.00             | 725.0  | 6.0                         |  |                                | 7.55                     |
| Feb.                          |  | 2.66                             | .095          | .101            |  | 127.68            | 960.0  | 4.0                         |  |                                | 7.55                     |
| Mar.                          |  | 2.83                             | .091          | .128            |  | 135.84            | 1026.0 | 6.0                         |  |                                | 7.55                     |
| Apr.                          |  | 2.14                             | .071          | .086            |  | 102.72            | 775.0  | 5.0                         |  |                                | 7.57                     |
| May                           |  | 1.27                             | .041          | .039            |  | 60.96             | 457.0  | 6.0                         |  |                                | 7.50                     |
| June                          |  | 2.06                             | .069          | .072            |  | 98.88             | 745.0  | 6.0                         |  |                                | 7.53                     |
| Total Per Year                |  | 24.93                            | .068          | (Daily Average) |  | 1196.64           | 9013.0 | 67.0                        |  |                                | 7.54 (Average)           |

Average Overall Efficiency of Each Pump and Motor = 41.7%

TABLE IX

PINELAKE SEWAGE PUMPING STATION

DISTRICT AREA - 3 ACRES

CONTRIBUTING POPULATION - 25

AVERAGE OPERATING HEAD - 56.0 FEET

| PUMPAGE IN MILLION GALLONS: |                 |               |                 |              | Million Foot Gallons |           | Power - K.W.H. |                      | K. W. H.                 |
|-----------------------------|-----------------|---------------|-----------------|--------------|----------------------|-----------|----------------|----------------------|--------------------------|
| Month                       | Total Per Month | Daily Average | Max. Per Day    | Min. Per Day | Data Not Available   | Per Month | Consumed       | Consumed             | Per Million Foot Gallons |
|                             |                 |               |                 |              |                      |           | By Pumps       | By Lights & Auxil's. | Month                    |
| July, 1946                  | .0165           | .00053        |                 |              |                      | .924      | 8.5            | Negligible           | 9.20                     |
| Aug.                        | .0257           | .00083        |                 |              |                      | 1.439     | 13.5           |                      | 9.36                     |
| Sept.                       | .0197           | .00065        |                 |              |                      | 1.103     | 10.0           |                      | 9.09                     |
| Oct.                        | .0224           | .00072        |                 |              |                      | 1.254     | 11.0           |                      | 8.80                     |
| Nov.                        | .0231           | .00074        |                 |              |                      | 1.294     | 11.5           |                      | 8.88                     |
| Dec.                        | .0211           | .00068        |                 |              |                      | 1.182     | 10.5           |                      | 8.90                     |
| Jan., 1947                  | .0221           | .00071        |                 |              |                      | 1.237     | 11.0           |                      | 8.90                     |
| Feb.                        | .0175           | .00062        |                 |              |                      | .980      | 9.0            |                      | 9.18                     |
| Mar.                        | .0187           | .00060        |                 |              |                      | 1.047     | 9.5            |                      | 9.07                     |
| Apr.                        | .0287           | .00096        |                 |              |                      | 1.607     | 14.0           |                      | 8.78                     |
| May                         | .0238           | .00077        |                 |              |                      | 1.333     | 12.0           |                      | 9.00                     |
| June                        | .0255           | .00085        |                 |              |                      | 1.428     | 13.0           |                      | 9.13                     |
| Total Per Year              | .2648           | .00072        | { Daily Average |              |                      | 14.828    | 133.0          |                      | 9.02 (Average)           |

Average Overall Efficiency of Each Pump and Motor = 35.4%



RICHMOND-SUNSET SEWAGE TREATMENT PLANT

The beaches along the north shore of the City westerly from Port Point, namely, Baker's Beach, China Beach and Deadman's Beach, and along the ocean front are among the main recreational areas of San Francisco. Previous to the construction of the Richmond-Sunset Sewage Treatment Plant these beach waters were grossly polluted, as shown by tests made by the Department of Public Health and by physical deposits on the shores. Since the Richmond-Sunset Plant has been in operation these conditions have been materially improved to the extent that these waters now conform to the bacteriological standards set by the State Department of Public Health and there are no physical evidences of sewage pollution.

The plant treats the sewage from the Richmond and Sunset Districts, the residential areas of the western slope of the City, comprising an area of 6,825 acres, with a contributing population of approximately 205,000 people.

Floating matter, grease and oil, grit, and practically all of the settleable solids are removed in the plant, and the effluent is chlorinated for bacterial disinfection before being discharged into the ocean at Mile Rock Outfall. Of the material removed from the sewage, the sludge is subjected to biological digestion, the screenings are incinerated and the grit is hauled to a dump for disposal. The digested sludge is elutriated, dewatered on a vacuum filter, and the filter cake produced is delivered to the Park Department for use as fertilizer.

PLANT ENLARGEMENTS

The 1935 report of the Board of Consulting Engineers on "The Treatment and Disposal of the Sewage of the City and County of San Francisco, California," recommended a plant having a capacity of 15 million gallons per day average flow for treatment of the sewage from the Richmond and Sunset Districts. The plant was constructed in 1938 to meet the recommended degree of treatment but sufficient



funds were not available to provide the full recommended capacities for all units. Provisions were made in the layout, however, for extensions when demanded by increased flow and when funds became available. At the present rate of flow some of the existing units are overloaded, the flow to the plant having increased from an average of 6.7 million gallons per day in 1939 to 10.5 million gallons per day in 1947.

Funds for construction of the necessary units to increase plant capacity to the design flow of 15 million gallons per day became available in the 1944 Sewer Bond Issue. On June 26, 1946, two contracts were awarded for the enlargement - a structural contract for \$523,900 to Clinton Construction Company, and a mechanical and electrical contract for \$276,297 to Anderson & Rowe.

The principal features of the enlargement contracts are:

Construction of new 100-ft. diameter pre-stressed concrete primary digester; conversion of existing 80-ft. diameter digester from primary to secondary, with installation of floating cover, and construction of digester operating house.

Construction of two additional mixing and sedimentation tanks with necessary mechanical equipment; removal of existing wooden superstructure and construction of new reinforced concrete structure over existing and new tanks, including ventilating equipment, etc.

Remodeling of existing sludge control house to increase capacity of thickening tanks and installation of additional sludge pumps and necessary piping; renewal and enlargement of ventilating system.

In the Pre-treatment Building: installation of additional chlorinator and electric evaporators; new sand pump; relocation of existing scum removal equipment to opposite end of grit-grease tanks.

In the Main Building: installation of additional vacuum filter and appurtenances; construction of new ferric chloride daily storage tank; additions to elutriation system; installation of new 20-ton truck scale; and other minor revisions.

Installation of two housed water storage tanks and pumps for City water to eliminate any possibility of contamination of City water with sewage and to increase water pressure.

Construction of eight-stall reinforced concrete garage.

Landscaping of plant area and construction of new paved areas.

At the end of the fiscal year approximately 70 per cent of the structural work and 40 per cent of the mechanical work had been completed. It is estimated that all of the work will be completed by February, 1948, depending upon delivery dates of mechanical equipment.

With the completion of the enlargements the plant will have sufficient capacity to handle adequately the ultimate flow from the tributary districts.

#### SEWAGE FLOWS

The total quantity of sewage treated during the year was 3,418.6 million gallons, of which 1,645.2 million gallons flowed to the plant by gravity from the Richmond District, and the balance, 1,773.4 million gallons from the Sunset District, was pumped to the plant inlet by the Sunset pumping plant. The total flow treated increased 195.2 million gallons over the preceding year. The average daily flow for the year was 10.5 million gallons for the actual time of plant operation, an increase of two per cent over the previous year. Of the above average daily flow, the Richmond District flow was 4.8 million gallons per day and the Sunset District flow was 5.7 million gallons per day. These flows are based on treating Richmond District sewage approximately 343 days and Sunset District sewage 312 days (See Table 1).

#### PRE-TREATMENT

The bar racks were operated continuously throughout the year. Approximately 1.25 cubic feet of screenings were removed per million gallons of sewage treated, making a total of 4,235 cubic feet. These screenings were transferred by buggy to the incinerator adjacent to the Main Building and burned.

Four grit-grease tanks were constructed in the original contract for the plant, two of which were equipped with mechanical equipment. The contract for the installation of the additional equipment was completed in May, 1947, and the tanks placed in ser-

vice. With this additional capacity more grit will be removed, thereby lessening the amount depositing in the mixing tanks ahead of the sedimentation tanks. A total of 657 cubic yards of sand was removed from the grit-grease tanks, washed and hauled to a City dump. In addition, 299,200 gallons of grease were pumped to the thickening tanks in the Sludge Control House. Additional grease is removed from the inlet channel to the mixing and sedimentation tanks and from the sedimentation tanks. A further benefit of the grit-grease tanks is the addition of oxygen to the sewage, with the result that the sewage is kept fresh in its travel through the plant.

#### CHLORINATION

The raw sewage was pre-chlorinated continuously for odor control at the rate of 30 pounds of chlorine per million gallons of flow. The plant effluent was chlorinated for disinfection, except during storms or when by-passing the Sunset flow, at a variable rate from 80 to 100 pounds per million gallons to maintain an average residual of 0.5 ppm after a contact period of five minutes. Approximately 103,000 pounds of chlorine were used for pre-chlorination and approximately 201,000 pounds for post-chlorination. Post-chlorination was very effective in destroying bacteria, and during the time it was used the coliform index of the plant effluent was on the average less than 10 organisms per milliliter, the limit set by the State Department of Public Health for beach waters. The bacteriological examinations of the plant effluent were made weekly by the Department of Public Health.

#### SLUDGE CONTROL AND SEDIMENTATION

The sewage after pre-treatment and chlorination is flocculated in mixing tanks (design holding capacity 30 minutes) and then settled in sedimentation tanks (design holding capacity 90 minutes). During the fiscal year, with flows averaging 140% of design capacity, removals of suspended solids averaged 69% for nor-

mal operation and 65% for the year, including two months affected by construction. The corresponding removals of 5-day BOD were 51% and 45%, respectively. The raw sewage averaged 240 ppm suspended solids and 265 ppm 5-day BOD.

The sludge from the sedimentation tanks flows by gravity to sludge thickening tanks through sight feeds to allow the operator to control withdrawals. After thickening, the sludge, plus the grease removed from other units, is pumped to the digester and the supernatant is returned to the inlet channel to the sedimentation tanks. For the year, 17,500,000 gallons of raw sludge averaging 4.43% solids, or 6,500,000 pounds of dry solids, were pumped to the digester. This sludge averaged 83.9% volatile.

#### SLUDGE DIGESTION

The single 80-ft. diameter digester handled the digestion of the raw sludge as effectively as could be expected with the limited capacity available. It was possible to reduce the average volatile matter by digestion from 83.9% to 65.8%, which, together with the reduction in total solids, gave a net reduction in volatile matter of 63.1%. Approximately 6,500,000 pounds of dry solids were pumped to the digester and 2,549,000 pounds of dry solids were removed during the year.

The seeding pump re-circulated bottom sludge to the top of the scum layer continuously, except during pumping of raw sludge to the digester when the seeded sludge was mixed with the incoming raw sludge. At times the digester contents were fairly uniform throughout and at other times the supernatant below the scum layer was relatively clear. This depended upon the total solids added to the digester. The withdrawal from the digester was regulated to correspond approximately to an equivalent amount of raw sludge added.

Gas production continued quite uniformly throughout the year; leakage of gas through the digester seals was at a minimum. During dry weather months metered gas production averaged 150,000 cubic

feet per day, or approximately 0.8 cubic feet per day per capita of connected population. Approximately one-half of the gas produced was utilized in the boilers for heating water circulating through the digester heating coils and for hot water for plant purposes. The balance of the gas was burned at the waste gas burner.

The temperature of the digester varied from 82 to 90°F. It was not possible to maintain uniformly high temperatures due to leaks in the heating coils and scale deposition on the coils. This condition will be corrected in the primary digester now being constructed by provision for removal of individual coils for necessary maintenance.

#### ELUTRIATION AND SLUDGE FILTRATION

All sludge withdrawn from the digester was washed in the elutriation tanks, using counter-current flow. Plant effluent was used as wash water in the ratio of approximately three volumes to one volume of sludge. Elutriation reduced the alkalinity of the digested sludge from an average of 1860 ppm as calcium carbonate to 380 ppm as calcium carbonate, a reduction of 80%.

The vacuum filter operated regularly throughout the year. The required average amount of ferric chloride based on dry solids was 4.27%. An average life of 1,000 hours has been obtained with the wool filter cloths. After this period blind spots appear and the percentage of ferric chloride required for filtration increases. Deposits of iron oxide on the filter screen were removed when the cloths were replaced by rotating the drum for about eight hours in an approximately 20 per cent hydrochloric acid solution inhibited with aniline oil. For the year approximately 8,000,000 pounds of filter cake of 75.1% moisture content, corresponding to 5500 cubic yards, were produced. This cake was hauled by plant personnel to City parks for use as fertilizer.

#### SUNSET PUMPING PLANT

The pumping plant was by-passed as usual during storms and

as required for construction of plant enlargements. The sump was pumped down daily and flushed to prevent accumulation of deposits when the plant was in operation. During the period of high flows from 8:00 a.m. to 6:00 p.m. a special pump discharges any sand accumulation, rags, and sticks into the force main to the inlet structure ahead of the Pre-Treatment Building. The sand pump operates for the balance of the day, discharging to the sand washer. Approximately 292 cubic yards of sand were removed from the Sunset pumping plant sump and discharged to a sand washer, thence to a hopper and hauled to a City dump. Screenings were removed by hand and incinerated.

#### LABORATORY

A total of approximately 12,000 routine and special analyses were made in the laboratory during the year. Routine analyses of samples collected regularly throughout the year from various units in the plant were as follows:

##### Daily:

Raw sewage and plant effluent (24-hr. composites):  
suspended solids, alkalinity, chlorides

Raw sludge (24-hr. composites): solids, volatile matter

Digested sludge (2 levels): solids, volatile matter,  
alkalinity, pH

Elutriated sludge (filter run composites): solids,  
volatile matter, alkalinity, specific gravity

Filter cake (filter run composites): solids, pH

Ferric chloride for filter operation: pounds ferric  
chloride per gallon

Digester gas: density

##### Bi-weekly:

Raw sewage and plant effluent (24-hr. composites):  
5-day BOD

##### Monthly:

Filter cake composites: nitrogen, phosphorus, humus

Sand from sand washer hoppers: volatile matter, sieve  
analyses, specific gravity

Digester: solids and volatile matter inventory

Miscellaneous

Ferric chloride shipments received: per cent ferric chloride, specific gravity

Studies on the distribution of solids in the digester and effects of withdrawal and circulation of sludge on stratification and scum formation were continued.

During the last half of the year a study was undertaken to determine the chlorine demand of plant effluent if it were used for chlorinator injector operation. This study was made to compare the relative economy of this method of chlorinator operation with other methods for the proposed North Point Sewage Treatment Plant. As applied to the ordinary chlorination of sewage, the study indicated that some saving in the amount of chlorine required (as measured by the orthotolidine test) could be obtained by modification of the method of application of the chlorinating solution into the sewage to be treated. Facilities for the indicated modifications are to be provided at the Richmond-Sunset Plant.

Research for improvement of laboratory methods of analyses has been continued, particularly with regard to the determination of suspended solids by the filter paper method, and the effects of drying time and method of desiccation on the determination of total solids in sludges.

IMPROVEMENTSPlant - General

Installed rails, guards, etc., throughout the plant to meet requirements of Industrial Accident Commission.

Pre-Treatment

Placed two additional grit-grease tanks in service (see Pre-Treatment).

Outside Structures

Installed new wire fence at Mile Rock bar screen.

MAINTENANCE & OPERATIONPersonnel

- 1 Superintendent
- 1 Assistant Superintendent & Chemist
- 1 Laboratory Assistant
- 1 Clerk-Stenographer
- 1 Chief Operating Engineer
- 2 Operating Engineers      }
- 1 Jr. Operating Engineer    } Day shift - Monday through Saturday
- 2 Operating Engineers      }
- 2 Jr. Operating Engineers    } Two shifts - one of each per shift
- 1 Operating Engineer        }
- 1 Jr. Operating Engineer    } Relief and maintenance
- 2 Laborers
- 1 Truck Driver

Total 17

Operation

The plant was operated continuously 24 hours a day on a three-shift basis except for by-passing of the Sunset sewage during rain or for construction of the enlargements. Necessary cleaning of tanks has been accomplished in a manner to allow for operation of some of the units so that the sewage would be partially treated during this period, thus minimizing the time when the whole plant was out of service. Whenever possible, repair and maintenance have been scheduled to correlate with shutdown periods.

Maintenance

Regular schedules of operation and maintenance have been set up. Some of the functions, such as general inspection, lubrication, etc., are carried on regularly as assigned duties for plant operating personnel. In addition, a schedule for periodic inspection, repair and maintenance has been laid out as follows: (Note - the following tabulation refers to the main items requiring servicing or replacement - other items are taken care of as needed)



Weekly:

Air filters - clean

Monthly:

Raw sludge pumps - wearing rings

Quarterly:

Sand pumps - linings

Seeding pump - wearing rings

Ferric chloride pump - impeller, shaft

Semi-annually:

Sewage pumps

Bar racks - wear plates on rake shoes

Vacuum filter - filter cloth

Vacuum filter appurtenances

Blowers

Ball bearing motors - grease change

Boilers - wash

Annually:

Chlorinators

Meters

Tank drives, chains, etc. - links, sprockets

Electrical Work:

Switchboards, panels, electrical connections - continual maintenance by Bureau of Building Repair electricians, approximating five days per month.

Painting:

Necessary painting of metal work, walls, etc., by Bureau of Building Repair painters as required.

Other work:

Truck repair and machine work are done by Purchasing Department Shops. Carpentry, plumbing, sheet metal work, etc., are done by Bureau of Building Repair.

Replacement Parts

A stock of replacement and spare parts is kept on hand. Part repairs requiring machine work beyond the capacity of plant personnel are taken care of by Purchasing Department Shops.

OPERATING SUMMARIES

Operating data for the fiscal year are given in tables 1 to 4 which follow the tabulation entitled "Cost of Operation."

RICHMOND-SUNSET SEWAGE TREATMENT PLANTCOST OF OPERATION

| <u>Item of Expenditure</u> | <u>Total Plant Operation</u> | <u>Sewage Treatment with Chlorination</u> | <u>Sunset Pumping Plant</u> | <u>Sludge Disposal Conditioning &amp; Filtration</u> | <u>Sewage Treatment without Chlorination</u> |
|----------------------------|------------------------------|-------------------------------------------|-----------------------------|------------------------------------------------------|----------------------------------------------|
| Permanent Salaries         | \$ 54,324                    | \$34,410                                  | \$ 7,482                    | \$12,432                                             | \$30,347                                     |
| Holidays                   | 931                          | 642                                       | 109                         | 150                                                  | 582                                          |
| Overtime                   | 34                           | 34                                        |                             |                                                      | 31                                           |
| Temporary Salaries         | 3,109                        | 2,431                                     | 224                         | 454                                                  | 2,194                                        |
| Wages                      | 9,066                        | 4,464                                     | 1,075                       | 3,527                                                | 4,045                                        |
| Contractual Services       | 6,558*                       | 4,676                                     | 855                         | 1,027                                                | 4,608                                        |
| Heat, Light & Power        | 11,283                       | 5,644                                     | 5,020                       | 619                                                  | 5,281                                        |
| Materials & Supplies       | 19,548*                      | 15,328                                    | 175                         | 4,045                                                | 4,312                                        |
| Totals                     | \$104,853                    | \$67,629                                  | \$14,940                    | \$22,284                                             | \$51,400                                     |

Richmond Flow (gravity) 1,645 MG  
 Sunset Flow (pumped) 1,774 "  
 Total 3,419 "

Cost of Operation per MG

\$30.67

\$19.78

\$4.37

\$6.52

\$15.03

Estimated cost per capita  
 (based on 205,000 population)

\$0.51 per year

5,150 cu yd filter cake, estimated value \$20,600, delivered to City Parks during year for use as fertilizer

Additional Expenditures

Plant Improvements \$3,210\*  
 Painting 2,472  
 Office Engineering 827\*  
 New Equipment 1,179

\* Estimated

\$7,688

The plant was shut down approximately 22 days to alter main electrical power lines as part of plant enlargements. In addition, the Sunset pumping plant was shut down during storms in order to minimize overflow from Sunset District storm sewers, and to avoid handling excessive quantities of sand in the sump.

## RICHMOND-SUNSET SEWAGE TREATMENT PLANT

TABLE 1 - SEWAGE TREATMENT DATA

| Month     | Flow, Million Gallons |                  | Days By-Passed |             | Rain<br>Inches | *Susp. Solids, ppm |       |     | 5-Day BOD, ppm |       |     |
|-----------|-----------------------|------------------|----------------|-------------|----------------|--------------------|-------|-----|----------------|-------|-----|
|           | Gravity<br>Richmond   | Pumped<br>Sunset | Rich-<br>mond  | Sum-<br>set |                | Raw                | Eff   | Rem | Raw            | Eff   | Rem |
| July 1946 | 141.8                 | 167.5            |                | .21         | 0.10           | 240                | 71    | 70  | 265            | 105   | 60  |
| Aug       | 140.6                 | 172.4            |                |             |                | 270                | 85    | 69  | 285            | 110   | 61  |
| Sept      | 135.2                 | 169.5            | .01            | .26         | 0.12           | 245                | 73    | 70  | 225            | 115   | 49  |
| Oct       | 126.1                 | 149.1            | 3.23           | 4.06        | 0.27           | 260                | 93    | 64  | 255            | 140   | 45  |
| Nov       | 142.2                 | 144.1            | 1.04           | 4.41        | 2.39           | 245                | 69    | 72  | 280            | 155   | 45  |
| Dec       | 159.2                 | 130.4            |                | 8.33        | 2.98           | 210                | 80    | 62  | 250            | 155   | 38  |
| Jan       | 152.4                 | 162.3            |                | 2.62        | 1.34           | 260                | 140** | 46  | 280            | 200** | 29  |
| Feb       | 136.7                 | 142.1            |                | 3.05        | 2.17           | 210                | 110** | 48  | 240            | 170** | 29  |
| Mar       | 157.1                 | 132.9            | .27            | 8.20        | 3.23           | 225                | 89    | 60  | 280            | 180   | 36  |
| Apr       | 58.5                  | 73.6             | 17.50          | 17.50       | 0.15           | 230                | 51    | 78  | -              | -     | -   |
| May       | 148.9                 | 173.0            |                | 1.35        | 0.55           | 240                | 54    | 78  | 305            | 145   | 52  |
| June      | 146.4                 | 156.5            | .10            | 3.35        | 0.75           | 250                | 72    | 71  | 240            | 145   | 40  |
| Totals    | 1645.2                | 1773.4           | 22.15          | 53.34       | 14.05          |                    |       |     |                |       |     |
| Wt Avg#   |                       |                  |                |             |                | 240                | 84    | 65  | 265            | 145   | 45  |
| Wt Avg##  |                       |                  |                |             |                |                    | 75    | 69  | 130            | 130   | 51  |

By-passing: Richmond - 22.15 days, contractors working on plant enlargements.  
 Sunset - 21.61 days,  
 31.73 days, rain

\* Suspended solids by modification of Chicago Sanitary District filter paper method.

Raw sewage sampled after mechanical bar racks.

\*\* Contains inorganic fines from construction work in Sedimentation Building.

# Weighted averages calculated from total flows by months.

## Excluding the months of January and February

## RICHMOND-SUNSET SEWAGE TREATMENT PLANT

TABLE 1 - SEWAGE TREATMENT DATA (Cont'd)

| Month     | Alkalinity as<br>CaCO <sub>3</sub> , ppm |     | Chlorides,<br>ppm |     | Sewage<br>Temp<br>Cp | #<br>Screen-<br>ings,<br>Cu Ft | **<br>Grease,<br>Gallons<br>Pumped | Sand, Cu Yd |         | Chlorination,<br>Lbs |         |
|-----------|------------------------------------------|-----|-------------------|-----|----------------------|--------------------------------|------------------------------------|-------------|---------|----------------------|---------|
|           | Raw                                      | Eff | Raw               | Eff |                      |                                |                                    | Pre-Treat   | Sun-set | Pre                  | Post    |
| July 1946 | 220                                      | 225 | 84                | 86  | 68                   | 338                            | 27,900                             | 39          | 11      | 9,490                | 26,330  |
| Aug       | 210                                      | 215 | 81                | 88  | 68                   | 350                            | 27,900                             | 39          | 16      | 9,570                | 26,470  |
| Sept      | 205                                      | 210 | 76                | 81  | 67                   | 326                            | 27,000                             | 46          | 14      | 9,130                | 25,300  |
| Oct       | 205                                      | 215 | 82                | 79  | 67                   | 340                            | 25,400                             | 62          | 28      | 8,160                | 22,740  |
| Nov       | 200                                      | 190 | 63                | 66  | 65                   | 340                            | 25,900                             | 63          | 30      | 8,560                | 22,070  |
| Dec       | 190                                      | 180 | 73                | 67  | 62                   | 380                            | 23,900                             | 80          | 30      | 8,710                | 18,220  |
| Jan       | 210                                      | 195 | 71                | 63  | 60                   | 410                            | 27,000                             | 64          | 29      | 9,470                | -       |
| Feb       | 200                                      | 200 | 67                | 69  | 61                   | 378                            | 24,400                             | 54          | 24      | 8,390                | -       |
| Mar       | 180                                      | 185 | 60                | 69  | 62                   | 429                            | 24,900                             | 60          | 28      | 8,680                | -       |
| Apr       | 220                                      | 215 | 80                | 72  | 64                   | 168                            | 10,900                             | 30          | 20      | 3,910                | 6,910   |
| May       | 205                                      | 210 | 69                | 70  | 67                   | 396                            | 27,600                             | 62          | 30      | 9,770                | 27,830  |
| June      | 185                                      | 195 | 58                | 70  | 70                   | 380                            | 25,500                             | 58          | 32      | 9,110                | 25,240  |
| Totals    | 200                                      | 205 | 72                | 73  | 65                   | 4,235                          | 299,200                            | 657         | 292     | 102,950              | 201,110 |
| Wt Avg*** |                                          |     |                   |     |                      |                                |                                    |             |         |                      |         |

\* Removed by Pre-Treatment bar racks only; screenings from Sunset sump not included.

\*\* Approximate removals from grit-grease tanks; additional removals in Mixing and Sedimentation Building not included.

\*\*\* Weighted averages calculated from total flows by months.

Pre-Chlorination - 30 lbs per million gallons  
 Post-Chlorination - 9 AM - 6 PM, 100 lbs per million gallons  
                           6 PM - 9 AM, 80 " "

No post-chlorination when Sunset flow by-passed.

## RICHMOND-SUNSET SEWAGE TREATMENT PLANT

TABLE 2 - SLUDGE TO DIGESTER AND GAS PRODUCTION

| Month     | Gallons    | Raw Sludge to Digester |                |            | Lbs Volatile | Lbs | Metered Gas Production - Cu Ft* |            | Digester Temp °F |
|-----------|------------|------------------------|----------------|------------|--------------|-----|---------------------------------|------------|------------------|
|           |            | % Total Solids         | Lbs Dry Solids | % Volatile |              |     | To Boilers                      | Total      |                  |
| July 1946 | 1,870,300  | 4.39                   | 689,400        | 82.3       | 567,500      |     | 1,652,500                       | 2,813,500  | 84               |
| Aug       | 1,882,400  | 4.30                   | 681,000        | 82.8       | 563,900      |     | 1,735,300                       | 2,770,900  | 84               |
| Sept      | 1,732,900  | 4.21                   | 614,400        | 82.6       | 507,300      |     | 1,727,500                       | 2,251,800  | 87               |
| Oct       | 1,362,900  | 4.52                   | 518,600        | 83.2       | 431,600      |     | 1,633,600                       | 1,645,600  | 89               |
| Nov       | 1,512,800  | 4.61                   | 586,200        | 84.5       | 495,600      |     | 1,817,400                       | 1,854,900  | 86               |
| Dec       | 1,508,900  | 4.00                   | 507,400        | 84.1       | 426,700      |     | 1,854,400                       | 1,607,700  | 83               |
| Jan 1947  | 1,654,000  | 4.93                   | 684,900        | 86.0       | 589,100      |     | 2,103,200                       | 1,863,300  | 82               |
| Feb       | 1,264,500  | 4.60                   | 483,200        | 85.5       | 417,400      |     | 1,842,800                       | 1,139,500  | 85               |
| Mar       | 1,327,100  | 4.39                   | 489,800        | 85.0       | 416,400      |     | -                               | -          | 86               |
| Apr       | 548,900    | 4.58                   | 211,400        | 83.3       | 176,000      |     | 817,600                         | 305,800    | 88               |
| May       | 1,585,800  | 4.44                   | 591,400        | 83.8       | 495,600      |     | 2,118,800                       | 2,378,700  | 89               |
| June      | 1,219,900  | 4.25                   | 435,900        | 84.4       | 367,700      |     | 1,574,900                       | 1,917,900  | 90               |
| Totals    | 17,471,400 |                        | 6,498,600      |            | 5,454,800    |     | 18,878,000                      | 20,549,600 |                  |
| Wt Avg**  |            | 4.43                   |                | 83.9       |              |     |                                 | 42,650,000 | 86               |

\* Does not include gas leakage at digester seals.

\*\* Estimated - meters out for repair.

\*\*\* Based on accumulated totals for year. All raw sludge computed at 8.40 pounds per gallon.

## RICHMOND-SUNSET SEWAGE TREATMENT PLANT

TABLE 3 - DIGESTED SLUDGE TO ELUTRIATION

| Month     | Sludge, Thousands of Gallons |         |         | % Solids      |         |      | Dry Solids, Thousands of Lbs |         |        |
|-----------|------------------------------|---------|---------|---------------|---------|------|------------------------------|---------|--------|
|           | From Digester                | Elut To | Net     | From Digester | Elut To | Net  | From Digester                | Elut To | Net    |
|           | Supnt                        | Bottom  | Dig     | Supnt         | Bottom  | Dig  | Supnt                        | Bottom  | Dig    |
| July 1946 | 2100.2                       | 27.1    | 2127.3  | 1.87          | 1.96    | 1.87 | 327.2                        | 4.5     | 331.7  |
| Aug       | 2049.7                       |         | 2049.7  | 1.75          |         | 1.75 | 297.8                        |         | 297.8  |
| Sept      | 2090.1                       |         | 2090.1  | 1.47          |         | 1.47 | 255.1                        |         | 255.1  |
| Oct       | 1713.7                       | 497.6   | 1811.3  | .83           | 2.76    | 1.36 | 90.4                         | 115.4   | 205.8  |
| Nov       | 1774.7                       | 128.4   | 1903.1  | .99           | 2.89    | 1.12 | 145.3                        | 31.2    | 176.5  |
| Dec       | 1938.8                       |         | 1938.8  | 1.16          |         | 1.16 | 186.9                        |         | 186.9  |
| Jan       | 2080.6                       |         | 2080.6  | 1.33          |         | 1.33 | 230.4                        |         | 230.4  |
| Feb       | 1680.2                       | 220.4   | 1900.6  | .82           | 2.70    | 1.04 | 114.9                        | 50.1    | 165.0  |
| Mar       | 2121.7                       | 154.3   | 2276.0  | .80           | 3.47    | .98  | 141.3                        | 45.0    | 186.3  |
| Apr       | 745.4                        | 56.8    | 802.2   | .67           | 3.67    | .89  | 41.8                         | 17.5    | 59.3   |
| May       | 2668.8                       |         | 2668.8  | 1.28          |         | 1.28 | 284.1                        |         | 284.1  |
| June      | 1843.0                       | 319.9   | 2162.9  | .50           | 3.46    | .89  | 77.1                         | 93.0    | 170.1  |
| Totals    | 22406.9                      | 1404.5  | 23811.4 | 1.18          | 3.02    | 1.28 | 2192.3                       | 356.7   | 2549.0 |
| Wt Avg*   |                              |         |         |               |         |      |                              |         |        |

\* Based on accumulated totals for year. All supernatant sludge from digester computed at 8.31 pounds per gallon, and all bottom sludge at 8.40 pounds per gallon.

## RICHMOND-SUNSET SEWAGE TREATMENT PLANT

TABLE 3 - DIGESTED SLUDGES TO ELUTRIATION (Cont'd)

| Month     | % Volatile    |         |      | Volatile, Thousands of Lbs |        |        | Avg Alk<br>As CaCO <sub>3</sub> ,<br>ppm | Solids<br>To Elut<br>To Dig |
|-----------|---------------|---------|------|----------------------------|--------|--------|------------------------------------------|-----------------------------|
|           | From Digester | Elut To | Net  | Supnt                      | Bottom | Dif.   |                                          |                             |
| July 1946 | 67.0          | 68.4    | 67.0 | 219.1                      | 3.1    | 222.2  | 2300                                     | .48                         |
| Aug       | 66.7          |         | 66.7 | 198.6                      |        | 198.6  | 2280                                     | .44                         |
| Sept      | 65.4          |         | 65.4 | 166.9                      |        | 166.9  | 2120                                     | .42                         |
| Oct       | 64.5          | 64.7    | 64.6 | 58.3                       | 74.6   | 132.9  | 2020                                     | .40                         |
| Nov       | 66.1          | 66.4    | 66.2 | 96.1                       | 20.7   | 116.8  | 2040                                     | .30                         |
| Dec       | 65.0          |         | 65.0 | 121.5                      |        | 121.5  | 1840                                     | .37                         |
| Jan 1947  | 66.8          |         | 66.8 | 154.0                      |        | 154.0  | 1720                                     | .34                         |
| Feb       | 67.2          | 64.8    | 66.5 | 77.2                       | 32.4   | 109.6  | 1580                                     | .34                         |
| Mar       | 65.2          | 62.0    | 64.5 | 92.1                       | 27.9   | 120.0  | 1500                                     | .45                         |
| Apr       | 65.5          | 64.5    | 65.2 | 27.4                       | 11.3   | 38.7   | 1800                                     | .28                         |
| May       | 65.9          |         | 65.9 | 187.2                      |        | 187.2  | 1740                                     | .48                         |
| June      | 65.0          | 64.3    | 64.7 | 50.1                       | 59.8   | 109.9  | 1540                                     | .39                         |
| Totals    | 66.1          | 64.4    | 65.8 | 1448.5                     | 229.8  | 1678.3 | 1860                                     | .39                         |
| Wt Avg*   |               |         |      |                            |        |        |                                          |                             |

\* Based on accumulated totals for year.

RICHMOND-SUNSET SEWAGE TREATMENT PLANT  
TABLE 4 - VACUUM FILTER OPERATION

| Month     | M<br>Gallons | %<br>Solids | Solids<br>M Lbs | %<br>Volatile | Volatile<br>M Lbs | Ash<br>M Lbs | Volatile<br>Ash | Alk as<br>CaCO <sub>3</sub> , ppm |
|-----------|--------------|-------------|-----------------|---------------|-------------------|--------------|-----------------|-----------------------------------|
| July 1946 | 746.6        | 2.88        | 181.3           | 68.0          | 123.3             | 58.0         | 2.12            | 405                               |
| Aug       | 783.2        | 2.83        | 187.3           | 68.2          | 127.6             | 59.5         | 2.14            | 400                               |
| Sept      | 661.8        | 2.92        | 163.8           | 67.9          | 111.2             | 52.6         | 2.12            | 405                               |
| Oct       | 666.0        | 3.44        | 194.8           | 66.1          | 128.7             | 66.1         | 1.95            | 395                               |
| Nov       | 586.5        | 3.31        | 164.0           | 66.8          | 109.6             | 54.4         | 2.01            | 375                               |
| Dec       | 566.6        | 3.59        | 172.0           | 66.0          | 113.5             | 58.5         | 1.94            | 375                               |
| Jan       | 757.2        | 2.99        | 191.3           | 68.9          | 131.9             | 59.4         | 2.22            | 395                               |
| Feb       | 546.0        | 2.97        | 137.0           | 68.5          | 93.6              | 43.2         | 2.17            | 355                               |
| Mar       | 554.0        | 3.21        | 150.3           | 67.0          | 100.7             | 49.6         | 2.03            | 345                               |
| Apr       | 160.4        | 3.48        | 47.3            | 65.1          | 30.8              | 16.5         | 1.86            | 380                               |
| May       | 733.4        | 3.36        | 209.6           | 66.7          | 139.9             | 69.7         | 2.00            | 360                               |
| June      | 469.4        | 3.10        | 122.2           | 67.3          | 82.3              | 39.9         | 2.06            | 320                               |
| Totals    | 7231.1       |             | 1920.9          |               | 1293.5            | 627.4        |                 |                                   |
| Wt Avg*   |              | 3.14        |                 | 67.4          |                   |              | 2.06            | 380                               |

\* Based on accumulated totals for year.



## RICHMOND-SUNSET SEWAGE TREATMENT PLANT

TABLE 4 - VACUUM FILTER OPERATION (Cont'd)

| Month     | Lbs<br>FeCl <sub>3</sub> | % FeCl <sub>3</sub><br>on<br>Solids | Hours<br>Filter<br>Operated | Lbs<br>Solids<br>Per Hr | Lbs<br>Per Sq Ft<br>Filter | Lbs Solids<br>Per Sq Ft | Filter<br>Cake<br>% Water | Filter<br>Cake<br>M Lbs | Gallons<br>Sludge<br>Filtered<br>Per Hr | Fil-<br>trate<br>M Lbs<br>Per Hr | Filter<br>Cake<br>Cu Yds |
|-----------|--------------------------|-------------------------------------|-----------------------------|-------------------------|----------------------------|-------------------------|---------------------------|-------------------------|-----------------------------------------|----------------------------------|--------------------------|
| July 1946 | 8060                     | 4.45                                | 215.30                      | 870                     | 4.35                       | 4.35                    | 74.5                      | 732.1                   | 3470                                    | 25.8                             | 516                      |
| Aug       | 8500                     | 4.54                                | 227.35                      | 850                     | 4.25                       | 4.25                    | 74.3                      | 768.7                   | 3440                                    | 25.6                             | 527                      |
| Sept      | 7170                     | 4.38                                | 191.43                      | 880                     | 4.40                       | 4.40                    | 75.3                      | 682.3                   | 3460                                    | 25.6                             | 489                      |
| Oct       | 8120                     | 4.17                                | 191.32                      | 1050                    | 5.25                       | 5.25                    | 75.2                      | 809.1                   | 3480                                    | 25.4                             | 549                      |
| Nov       | 8330                     | 5.07                                | 169.71                      | 1000                    | 5.00                       | 5.00                    | 77.0                      | 736.1                   | 3460                                    | 24.8                             | 482                      |
| Dec       | 8320                     | 4.84                                | 162.90                      | 1090                    | 5.45                       | 5.45                    | 76.5                      | 755.0                   | 3480                                    | 24.8                             | 469                      |
| Jan       | 9130                     | 4.77                                | 219.56                      | 900                     | 4.50                       | 4.50                    | 74.6                      | 777.9                   | 3450                                    | 25.7                             | 536                      |
| Feb       | 5120                     | 3.74                                | 159.86                      | 880                     | 4.40                       | 4.40                    | 73.8                      | 536.2                   | 3420                                    | 25.4                             | 402                      |
| Mar       | 4420                     | 2.94                                | 161.71                      | 950                     | 4.75                       | 4.75                    | 75.2                      | 618.8                   | 3420                                    | 25.1                             | 409                      |
| Apr       | 1930                     | 4.08                                | 45.96                       | 1060                    | 5.30                       | 5.30                    | 74.1                      | 187.2                   | 3500                                    | 25.6                             | 350                      |
| May       | 8500                     | 4.06                                | 210.65                      | 1020                    | 5.10                       | 5.10                    | 75.8                      | 890.6                   | 3480                                    | 25.4                             | 605                      |
| June      | 4400                     | 3.60                                | 133.44                      | 940                     | 4.70                       | 4.70                    | 74.0                      | 481.3                   | 3520                                    | 26.6                             | 373                      |
| Totals    | 82000                    |                                     | 2089.09                     | 950                     | 4.75                       | 4.75                    | 75.1                      | 7975.3                  | 3460                                    | 25.5                             | 5511*                    |
| Wt Avg**  |                          | 4.27                                |                             |                         |                            |                         |                           |                         |                                         |                                  |                          |

\* 5150 cu yd to City Parks  
361 " " Public

\*\* Based on accumulated totals for year.

REPORTS PREPARED 1946-47

During the past fiscal year the Bureau of Engineering prepared and issued the following reports:

Obligations as to the "Use of Streets under Franchises and Permits"

Vol.IIA - Index - Steam Railroads as of June 3, 1946  
Vol.IV - Street Railways - California Street Cable Railroad Company as of December 31, 1946

Estimate of Cost of Rehabilitation of Street Car Track Streets, February 1947

In addition, the Bureau collaborated with other bureaus and departments in the preparation of the following reports:

Report to Joint Army-Navy Board on "New San Francisco Bay Crossing" August 1946

Study of Traffic Distribution Facilities for Second Bay Crossing, December 1946

Annual Report of the Department of Public Works for the year ending June 30, 1946

Manuals for the information and guidance of personnel of the Bureau were issued as follows:

Manual of Instructions  
Construction Division dated May 1946

Manual of Instructions  
Sidewalk and Complaint Section  
Division of Streets & Highways dated June 1946

Manual for Structural Design  
(Revised) dated May 1947

SUBSIDENCE SURVEYS

During the past year additional bench marks were set on 24,200 lineal feet of curbs in the subsidence area which was formerly Mission Bay and Mission Creek located in the vicinity of the junction of the 100 Vara, Potrero, and Mission Districts. Marks were set at approximately 100-foot intervals and carefully recorded so that they can readily be identified for future use. Elevations were established by precise leveling from bench marks on solid ground.

Levels were also run over the bench marks set on 70,000 feet of curb last year in the 50 Vara and 100 Vara Districts. The differences of elevation as shown by the two surveys, which represent the annual subsidence, have been recorded for future reference and are available to all interested parties.

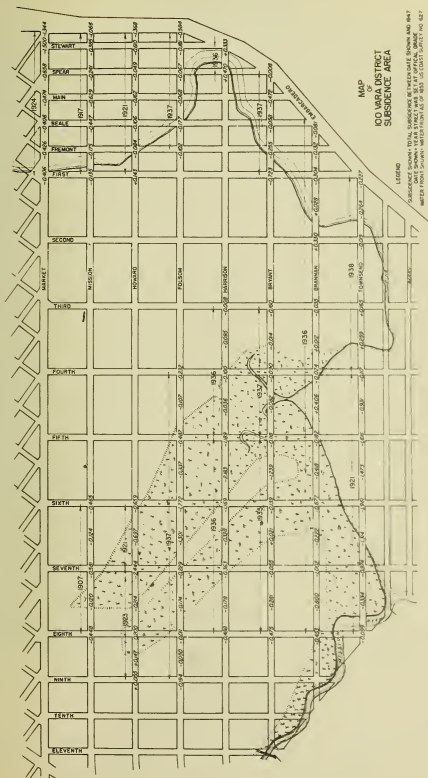
By comparing the 1947 elevations on the curbs with the corresponding elevations at the time the various streets were last reconstructed to official grade, it is possible to determine, approximately at least, the total subsidence over a period of years. To illustrate this procedure, the two accompanying maps have been prepared for the 50 Vara and 100 Vara Districts. The figures shown on streets or at intersections represent the total subsidence expressed to thousandths of a foot. The date of the last reconstruction of each street is shown in figures just above the street location except where the date is unknown. The period of time in years during which the subsidence occurred is, in each case, the difference between 1947 and the date on the map. It will be noted that this period varies from 10 to 40 years or more.

The following table gives a few subsidence figures as derived from the maps. The locations are selected at random from among those showing the largest amount of subsidence.

Recorded Subsidence at Selected Locations

| <u>Location</u>                                 | <u>No. of<br/>years</u> | <u>Av. subsidence<br/>in ft. per yr.</u> |
|-------------------------------------------------|-------------------------|------------------------------------------|
| North Point St., between Stockton & Powell Sts. | 23                      | .024                                     |
| Pacific St. between Drumm & Davis Sts.          | 31                      | .013                                     |
| Clay St. between the Embarcadero & Drumm St.    | 37                      | .040                                     |
| California St. between Front & Battery Sts.     | 35                      | .041                                     |
| Pine St. between Market & Front Sts.            | 24                      | .071                                     |
| Market St. at Main St.                          | 23                      | .021                                     |
| Mission St. at 7th St.                          | 40                      | .015                                     |
| Howard St. between 6th & 7th Sts.               | 26                      | .027                                     |
| Folsom St. at 6th St.                           | 10                      | .177                                     |
| Harrison St. between 5th & 6th Sts.             | 11                      | .199                                     |





CENTRAL PERMIT BUREAU

S. J. Rosenblum, Head Clerk

FUNCTIONS

The Central Permit Bureau, established January 8, 1932, concurrent with the effective date of the present Charter under which the City and County of San Francisco operates, is a subdivision of the Department of Public Works, H. C. Vensano, Director.

The function of this bureau is the acceptance of applications and the clearance of same to the necessary departments for approval or disapproval. Upon receipt of said approvals or disapprovals, it is then the duty of this bureau to issue the necessary permits predicated upon these applications and to collect the fees in payment of same as prescribed by the Charter and Ordinances of the City and County of San Francisco. It is further the duty of this bureau to issue Certificates of Occupancy for buildings coming under the jurisdiction of the State Housing Act (hotels and apartment houses), and also for all commercial and industrial structures as well as office buildings.

In addition to the above, the supervisory head of this bureau acts as Cashier for the Department of Public Works. All moneys received by the department clear through his office and are deposited daily with the Treasurer of the City and County, pursuant to the provisions of Section 82 of the Charter.

PERSONNEL

Personnel of the bureau, as of June 30, 1947, consisted of the following:

- 1 Head clerk
- 2 Senior clerks
- 1 General clerk
- 4 General clerk-typists

There has been no increase in the personnel of this bureau since its establishment in 1932, although during the lean years of the World War II period the staff was reduced to five.

WORK PERFORMED

The fiscal year 1946-47 was the banner year since this bureau was organized. It exceeded the previous fiscal year, 1945-46, which had shown a marked increase over all prior years. As a concrete example of the tremendous increase in work flowing through this office, building permits issued increased 6% over the fiscal year 1945-46, and 64% over the fiscal year 1944-45. Fees received in payment of these permits show an increase of 10% over 1945-46, and 180% over 1944-45. Most all other types of permits handled by this bureau have shown a corresponding increase.

STATISTICAL DATAComparative Statement of Permits IssuedPermits

|                                          | <u>1946-47</u> | <u>1945-46</u> | <u>1944-45</u> |
|------------------------------------------|----------------|----------------|----------------|
| Buildings .....                          | 7,311          | 6,914          | 4,453          |
| Billboards .....                         | 378            | 532            | 307            |
| Boiler Installations .....               | 272            | 206            | 146            |
| Boiler Inspections .....                 | 7              | 4              | 8              |
| House Moving .....                       | 47             | 22             | 21             |
| Demolitions .....                        | 62             | 61             | 34             |
| Flue Registrations .....                 | 46             | 31             | 19             |
| Flue Permits - new buildings .....       | 26             | 15             | 5              |
| Flue Permits - old buildings .....       | 67             | 49             | 63             |
| Flue Coupon Books - new buildings .....  | 97             | 81             | 55             |
| Flue Coupon Books - old buildings .....  | 23             | 15             | 63             |
| Construct Sidewalks .....                | 29             | 48             | 42             |
| Street Space .....                       | 1,345          | 1,344          | 546            |
| Excavations .....                        | 882            | 739            | 288            |
| Side Sewers .....                        | 946            | 916            | 593            |
| Excess Costs - Side Sewers .....         | 217            | 115            | 39             |
| Sidewalk Flower Markets .....            | 40             | 40             | 45             |
| Blasting .....                           | 5              | 1              | 3              |
| Advertising .....                        | 18             | 10             | 4              |
| House Number Certificates .....          | 1,244          | 1,297          | 529            |
| Payments for Surveys .....               | 60             | 48             | 29             |
| Payments for Engineering Inspection .... | 86             | 65             | 48             |
| Payments for Street Improvement Bonds .. | 12             | 77             | 87             |
| Public Utilities Street Openings.....    | <u>7,179</u>   | <u>5,203</u>   | <u>5,237</u>   |
| Total number of permits issued           | 20,399         | 17,827         | 12,664         |

## Refunds made from Special and Trust Funds

|                                | 1946-47 |              | 1945-46 |              | 1944-45 |              |
|--------------------------------|---------|--------------|---------|--------------|---------|--------------|
|                                | Refunds | Amount       | Refunds | Amount       | Refunds | Amount       |
| Special Permit Fund            |         |              |         |              |         |              |
| (Street space & sub-sidewalks) | 1,070   | \$ 39,227.00 | 687     | \$ 23,930.00 | 412     | \$ 18,910.00 |
| House Moving Fund .....        | 44      | 4,400.00     | 22      | 2,200.00     | 18      | 1,800.00     |
| Excavations .....              | 28      | 562.00       | 30      | 414.70       | 29      | 207.00       |
| Side Sewers:                   |         |              |         |              |         |              |
| Refunds to Depositors .....    | 974     | 36,082.76    | 725     | 40,492.94    | 510     | 23,958.55    |
| Installation Costs             |         |              |         |              |         |              |
| credited to General Fund ...   |         | 125,124.24   |         | 84,305.87    |         | 70,130.30    |
| Deposits on Plans .....        | 1,046   | 16,600.00    | 791     | 15,420.00    | 642     | 5,465.00     |
| Street Improvement Bonds ..... | 3       | 6,379.39     | 5       | 1,744.80     | 2       | 107.04       |
|                                | 3,165   | \$228,375.39 | 2,260   | \$168,508.31 | 1,613   | \$120,577.89 |

## Report of House Numbering Activities

|                                                                                                                           | 1946-1947 |        | 1945-1946 |           | 1944-1945 |        |
|---------------------------------------------------------------------------------------------------------------------------|-----------|--------|-----------|-----------|-----------|--------|
|                                                                                                                           | Refunds   | Amount | Refunds   | Amount    | Refunds   | Amount |
| House Numbers issued:                                                                                                     |           |        |           |           |           |        |
| Private Construction                                                                                                      | 2,804     |        | 2,854     |           | 1,745     |        |
| S. F. Housing Authority Projects                                                                                          | 1,125     | 3,929  | 2,500     | 5,354     | 7,500     | 9,245  |
| Investigations made                                                                                                       |           |        |           |           |           |        |
| and Complaints adjusted                                                                                                   |           | 945    |           | 850       |           | 525    |
| Changes in House Numbering ordered                                                                                        |           | 160    |           | 125       |           | 79     |
| Inquiries from Banks, Title Insurance Companies, General Public, etc. - answered                                          |           | 3,000  |           | 2,700     |           | 1,500  |
| Additional Non-Revenue Activities                                                                                         |           |        |           |           |           |        |
|                                                                                                                           |           |        | 1946-1947 | 1945-1946 | 1944-1945 |        |
| Inquiries pertaining to age and class of buildings, and other information requiring reference to old applications on file |           |        | 10,300    | 9,241     | 7,255     |        |
| Plans brought from the basement by request for reference purposes and photostating                                        |           |        | 900       | 815       | 612       |        |



Cashier's ReportSource of Receipt

|                              |                  |
|------------------------------|------------------|
| Street space permit deposits | \$ 46,352.00     |
| Sub-sidewalk " "             | 1,120.00         |
| House-moving " "             | 4,700.00         |
| Side sewer " "               | 159,387.00       |
| Deposits on plans            | <u>15,905.00</u> |

\$227,464.00

Excavation Permits

|                                        |                 |
|----------------------------------------|-----------------|
| Special deposits                       | \$ 824.00       |
| Insp. fees for Excav. (Spec. deposits) | 69.00           |
| " " (Public utility corporations)      | 12,183.00       |
| " " (Lowering curbs, etc.)             | <u>3,826.50</u> |

16,902.50

## Fees for:

|                           |               |
|---------------------------|---------------|
| Building permits          | \$156,795.80  |
| Billboard permits         | 756.00        |
| Boiler installations      | 1,099.50      |
| Boiler inspections        | 135.00        |
| Use of street space       | 29,146.85     |
| House number certificates | 6,616.00      |
| House moving permits      | 96.00         |
| Flue registrations        | 920.00        |
| Flues - New buildings     | 13.00         |
| " Old buildings           | 134.00        |
| " New buildings {coupons} | 1,212.50      |
| " Old buildings {coupons} | <u>460.00</u> |

197,384.65

Sidewalk flower markets - fees 1,488.00

Side sewers - excess costs 3,960.24

Advertising charges 1,802.80

Payments on Street Improvement Bonds 10,862.74

Payments on Street Improvement Bonds (Ord. of 1934) 3,103.32

Surveys - fees 13,505.00

Inspections - fees 17,597.50

Miscellaneous 1,373,922.99Total receipts \$1,867,993.74

Note: 62 Demolition permits }  
 29 Sidewalk permits }

Issued - no fees charged

Deposits with City and County Treasurer  
Classified by Funds

General Fund

|                                |              |
|--------------------------------|--------------|
| Street space and sub-sidewalks | \$ 47,472.00 |
| House-moving                   | 4,700.00     |
| Side sewers                    | 159,387.00   |
| Plans                          | 15,905.00    |

|             |           |
|-------------|-----------|
| Surveys     | 13,505.00 |
| Inspections | 17,597.50 |

|              |                  |
|--------------|------------------|
| Excavations: |                  |
| Deposits     | \$ 824.00        |
| Fees         | <u>16,078.50</u> |
|              | 16,902.50        |

|             |          |
|-------------|----------|
| Advertising | 1,802.80 |
|-------------|----------|

|                            |          |
|----------------------------|----------|
| Side sewers - excess costs | 3,960.24 |
|----------------------------|----------|

|                              |               |
|------------------------------|---------------|
| Fees -                       |               |
| Building permits             | \$156,795.80  |
| Billboards                   | 756.00        |
| Street space                 | 29,146.85     |
| House numbers                | 6,616.00      |
| House-moving                 | 96.00         |
| Boiler installations         | 1,099.50      |
| Boiler inspections           | 135.00        |
| Flue registrations           | 920.00        |
| Flues - new buildings        | 13.00         |
| "    old buildings           | 134.00        |
| "    new buildings (coupons) | 1,212.50      |
| "    old buildings (coupons) | <u>460.00</u> |
|                              | 197,384.65    |

|                                |          |
|--------------------------------|----------|
| Sidewalk Flower Markets - fees | 1,488.00 |
|--------------------------------|----------|

|                                        |           |
|----------------------------------------|-----------|
| Street Improvement Fund                | 10,862.74 |
| Street Improvement Fund (Ord. of 1934) | 3,103.32  |

Miscellaneous Funds

|                                    |                   |
|------------------------------------|-------------------|
| State Highway Trust                | \$221,507.82      |
| Special Road Improvement           | 16,149.38         |
| General                            | 1,079.41          |
| Special Gas Tax Street Improvement | 853,846.61        |
| 1944 Sewer Bond                    | <u>281,339.77</u> |
|                                    | 1,373,922.99      |

|                                               |                       |
|-----------------------------------------------|-----------------------|
| Total deposits with City and County Treasurer | <u>\$1,867,993.74</u> |
|-----------------------------------------------|-----------------------|

Classification of Building Permits Issued

| <u>Class</u>     | <u>No. of<br/>Permits</u> | <u>Estimated<br/>Cost</u> | <u>Fees</u>  |
|------------------|---------------------------|---------------------------|--------------|
| A                | 11                        | \$ 2,641,100              |              |
| B                | 12                        | 1,312,684                 |              |
| C                | 73                        | 1,938,377                 |              |
| Frames           | 2,463                     | 20,232,365                |              |
| Alterations      | 4,748                     | 10,700,979                |              |
| Public           | -                         | -                         |              |
| U. S. Government | -                         | -                         |              |
| Printer's copy   | (4)                       |                           |              |
| Totals           | 7,307                     | \$36,825.505              | \$156,795.80 |
| Billboards       | 378                       | 18,900                    | 756.00       |
| Totals           | 7,685                     | \$36,844.405              | \$157,551.80 |

(Total number of building applications received - 8,557)

Flue Registrations and Permits

|                               |     |             |
|-------------------------------|-----|-------------|
| Flue Registrations            | 46  | \$ 920.00   |
| *Coupon Books - new buildings | 97  | 1,212.50    |
| ** " " old "                  | 23  | 460.00      |
| Flue permits new "            | 26  | 13.00       |
| " " old "                     | 67  | 134.00      |
| Totals                        | 259 | \$ 2,739.50 |

Miscellaneous Permits

|                            |        |          |
|----------------------------|--------|----------|
| To raze structures         | 62     | -        |
| To move buildings          | 47     | \$ 94.00 |
| Boiler installations       | 272    | 1,099.50 |
| Boiler inspection requests | 67 *** | 135.00   |
| Totals                     | 448    | 1,328.50 |

GRAND TOTALS 8,392 \$161,619.80

\* New coupon books contain  
25 prepaid coupons

\*\* Old coupon books contain  
10 prepaid coupons

\*\*\* Includes book credit

BUREAU OF BUILDING INSPECTION

John G. Little, Superintendent

FUNCTIONS

The Bureau examines and reports on all applications for permits submitted to the Department of Public Works for new buildings, alterations to existing buildings, bill-boards and signs (electric and non-electric); inspects all this work as it progresses, makes final inspections and issues certificates of final completion when the work is finished. It cooperates in consultations with architects, engineers, contractors, and home owners in the preliminary stages of preparation of their plans, whether for new buildings or alterations to existing buildings. It reports on legislation affecting building matters and proposes new legislation as required.

PERSONNEL

The personnel of the bureau as of June 30, 1947, consists of the following classifications:

- 1 Superintendent
- 2 Structural engineers
- 14 Building inspectors
- 1 Boiler inspector
- 2 Clerk stenographers

EQUIPMENT

15 Passenger automobiles

ORGANIZATION

Superintendent - In addition to performing the duties of his office, attends the meetings of the Pacific Coast Building Officials Conference and of other organizations dealing with matters of building construction, building codes, and building safety, and takes an active part in their deliberations. (He is Chairman of the Emergency Committee of the Structural Engineers Association of Northern California which will function in case of disaster.)

Building Inspectors - One inspector, acting as assistant

superintendent, coordinates and directs the office and field work of the various structural engineers, inspectors, and clerical force.

One inspector, as special assistant to the assistant superintendent, coordinates all complaints and follows up those not adjusted by the district building inspectors; reports on all applications for operations of night clubs, dance halls and other places of public assembly, etc. and handles requests of a general nature.

One inspector, as special assistant to the assistant superintendent, checks all plans for new construction and estimates the cost thereof; he contacts the applicants for building permits and others requesting information; prepares assignments for the district building inspectors and follows up their activities and keeps records of all personnel of the bureau.

Eleven inspectors are assigned to definite districts in which the City is divided and are charged with the responsibility for inspection work in their respective districts, and this includes new construction of all types, alterations, bill-boards and signs. They report on all applications for construction in their districts prior to examination by the divisions of the bureau, prepare and post certificates of final completion, check and follow up complaints, interview property owners, attend meetings of the Board of Permit Appeals and appear before courts in matters of condemnation and prosecution.

Boiler Inspector - Makes all investigations, inspections and reports pertaining to construction of steam boilers and air-pressure tanks.

Structural Engineers - Check and report on all plans pertaining to structural engineering, make field inspections, follow up matters concerning structural safety brought to their attention by the district building inspectors, assist other bureaus and departments in structural matters, suggest revisions to the building laws and have completed the editing of a new building code.

Clerical Force - Takes care of all correspondence and files of the bureau and keeps records of all matters pertaining to the issuance of certificates of final completion.

#### BUILDING CONSTRUCTION

Building construction during the past year was mainly of a residential character; many two-story and basement four-family apartments were built but no large apartment houses or hotels. Although much residential construction has been completed there is still a shortage of proper housing, due primarily to the influx of veterans to this State with the cessation of World War II.

Within the past several months there has been an increase in construction for commercial use; for instance, the expansion of telephone facilities, which has been reflected in additional telephone exchanges and the additions, horizontally and vertically, to already existing structures for telephone exchanges. Other public utilities, shipping, and industrial concerns in general have had to take care of increased demands by new construction and by additions to existing buildings.

The shortage of essential materials for construction has eased up considerably and there is every indication of a continuing increase in building construction.

#### BUILDING CODE

One of the most important tasks performed by the bureau for the second consecutive fiscal year was in connection with the preparation of the new building code. One structural engineer devoted his whole time to this work. The preliminary draft was completed under date of March 1, 1946, and copies submitted to all interested organizations for study and suggestion. The response from these organizations was highly constructive and was utilized in the preparation of a revised draft which was completed under date of August 10, 1946. This revised draft was sent to all who had received the



BUTLER BUILDING, showing exterior facing  
(Building stripped to steelworks shown in report of 1945-46)



FURNITURE MART, 10-story Class B addition  
Completing Market Street frontage from 9th to 10th St.

original draft of the code, and after adjustment of controversial matters the code was passed to print by the Board of Supervisors at a meeting on June 9, 1947. This code is now being printed and will be voted upon for final passage in about three weeks' time.

#### WORK DONE

The extent of routine operations of the Bureau of Building Inspection for the fiscal year is set forth in the following tabulation of building permits taken from the records of the Central Permit Bureau:

| <u>Class</u>       | <u>No. of Permits</u> | <u>Cost</u>       |
|--------------------|-----------------------|-------------------|
| A                  | 11                    | \$ 2,641,100      |
| B                  | 12                    | 1,312,684         |
| C                  | 73                    | 1,938,377         |
| Frame construction | 2,463                 | 20,232,365        |
| Alterations        | <u>5,126</u>          | <u>10,719,879</u> |
| Totals             | 7,685                 | \$36,844,405      |

The following statistics of monthly reports indicate volume of work done during the year:

|                                                           |        |
|-----------------------------------------------------------|--------|
| Number of inspections reported by inspectors of buildings | 54,524 |
|-----------------------------------------------------------|--------|

|                                                                                                                                 |       |
|---------------------------------------------------------------------------------------------------------------------------------|-------|
| Number of projects remaining on which permits have been issued that have not been reported completed by inspectors of buildings | 4,256 |
|---------------------------------------------------------------------------------------------------------------------------------|-------|

|                                                                                  |       |
|----------------------------------------------------------------------------------|-------|
| Number of complaints that have been reported adjusted by inspectors of buildings | 1,158 |
|----------------------------------------------------------------------------------|-------|

|                                                         |       |
|---------------------------------------------------------|-------|
| Number of inspections reported by inspectors of boilers | 1,664 |
|---------------------------------------------------------|-------|

|                                                                                                                               |   |
|-------------------------------------------------------------------------------------------------------------------------------|---|
| Number of projects remaining on which permits have been issued that have not been reported completed by inspectors of boilers | 2 |
|-------------------------------------------------------------------------------------------------------------------------------|---|

|                                                            |     |
|------------------------------------------------------------|-----|
| Number of complaints and requests for information recorded | 140 |
|------------------------------------------------------------|-----|

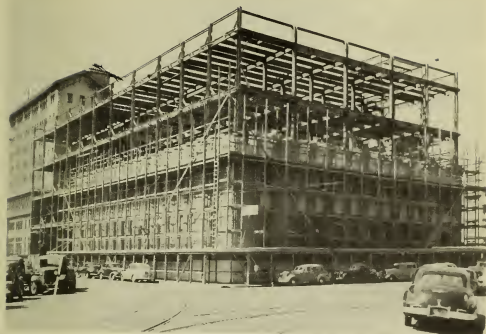
|                                                                                   |     |
|-----------------------------------------------------------------------------------|-----|
| Number of complaints and requests on which initial inspections have been reported | 135 |
|-----------------------------------------------------------------------------------|-----|

|                                                                                     |       |
|-------------------------------------------------------------------------------------|-------|
| Number of applications for permits examined by and approved by structural engineers | 4,059 |
|-------------------------------------------------------------------------------------|-------|

|                                            |    |
|--------------------------------------------|----|
| Number of applications for permits pending | 60 |
|--------------------------------------------|----|

|                                                                        |        |
|------------------------------------------------------------------------|--------|
| Miles traveled during the year by passenger cars on inspection service | 95,280 |
|------------------------------------------------------------------------|--------|





TELEPHONE BUILDING, Otis & McCoppin Sts.  
4-story extension to existing exchange



TELEPHONE BUILDING, 25th & Capp Sts.  
New exchange building

BUREAU OF ARCHITECTURE

Dodge A. Riedy, City Architect

FUNCTIONS

The Bureau of Architecture prepares plans, specifications, and estimates for new construction, also alterations and repairs to public buildings on contracts in excess of \$2000. All architectural work for the Board of Education, Department of Health, Fire Department, Police Department, Sheriff, Public Welfare Department, Juvenile Court, Department of Electricity, and for all other property under the jurisdiction of the Department of Public Works, such as Repair Shops, Yards, City Hall, Hall of Justice, Civic Auditorium, California Palace of the Legion of Honor, and M.H.deYoung Memorial Museum, War Memorial Building, Juvenile Court, Library Department, Law Library, is handled by this department.

On major projects which the Bureau is not equipped to handle, architects are appointed for individual contracts and their work is under the direction and supervision of the City Architect.

PERSONNEL

The personnel of the bureau as of June 30, 1947, was:

- 1 City architect
- 4 Architectural draftsmen
- 3 Clerk-stenographers
- 18 Building inspectors

WORK DONE

During the past year, a great deal of work was done in alterations, repairs, and maintenance of the buildings of the various departments. Architects and engineers were appointed and work is under progress on plans for a number of jobs for the Board of Education, Fire Department, and Juvenile Court. For the past few years the Bureau of Architecture has been handicapped by the shortage of technical help in the drafting room. The Civil Service Commission is now conducting examinations for Assistant City Architect, Architect, Architectural Designer, Senior Architectural Draftsman,

and Architectural Draftsman. As soon as these lists are certified this Bureau will have additional help and will be in a better position to serve the different departments.

The following tabulations list the various jobs which were under way during the past fiscal year.

### WORK COMPLETED

#### Board of Education - School Buildings

|                                                                                   |             |
|-----------------------------------------------------------------------------------|-------------|
| Commerce, Mission & Polytechnic high auditoriums                                  |             |
| Installation of public address systems                                            | \$ 8,143.00 |
| Farragut                                                                          |             |
| Addition to steel fire escape                                                     | 1,647.00    |
| Galileo high                                                                      |             |
| Additional equipment for kitchen                                                  | 2,268.50    |
| Plastering repairs                                                                | 720.00      |
| Gas burner equipment for the present boilers                                      | 4,938.00    |
| Additional work in connection with the installation of gas burners in the boilers | 854.00      |
| Explosion covers on boilers                                                       | 988.00      |
| Galileo, Mission, & Polytechnic high                                              |             |
| Everett Junior high                                                               |             |
| Refinishing gymnasium floors                                                      | 5,192.00    |
| Hancock                                                                           |             |
| Repairs and new hot water system for girls' showers                               | 6,161.48    |
| Hillcrest                                                                         |             |
| Additional frame buildings                                                        | 35,977.00   |
| Lafayette                                                                         |             |
| Repaving yard                                                                     | 13,655.00   |
| Lawton                                                                            |             |
| Reconstruction of glass blocks in stair tower #1                                  | 2,584.00    |
| Ridgepoint war dwellings                                                          |             |
| Additional class rooms sites Nos. 1, 2, & 3                                       | 40,942.74   |
| Samuel Gompers Trades                                                             |             |
| Fluorescent lighting system in the fourth floor drafting room                     | 2,969.99    |
| Ulloa                                                                             |             |
| Moving, underpinning and reconditioning two portable frame class rooms            | 6,823.00    |
| West Portal, McKinley and Polytechnic high                                        |             |
| Replacement and repairs to blackboards and pinning spaces                         | 33,173.44   |
| Various schools                                                                   |             |
| Removal of the glass protection                                                   | 19,920.00   |
| Board of Education warehouse                                                      |             |
| Alterations for typewriter repair room                                            | 3,388.00    |

Painting work - School buildingsInterior

|                                                                                                           |             |
|-----------------------------------------------------------------------------------------------------------|-------------|
| Balboa high, Onodaga, Cayuga, Otsego, & Seneca Aves.<br>Cafeteria                                         | \$ 3,427.00 |
| Cleveland, Persia Ave. bet. Moscow & Athens Sts. }<br>Farragut, Holloway Ave. bet. Capitol & Faxon Sts. } | 18,848.00   |
| Everett Junior high, Church St., bet. 16th & 17th Sts.<br>Boys' & Girls' gymnasiums                       | 6,127.00    |
| Galileo high, bet. Bay & Francisco Sts.<br>Polk St. Wing                                                  | 11,680.00   |
| Van Ness Wing                                                                                             | 45,142.50   |
| Hancock, Filbert St., bet. Jones & Taylor Sts.                                                            | 12,864.00   |
| Mission high, 18th St. bet. Dolores & Church Sts.<br>Boys' & Girls' gymnasiums                            | 9,680.00    |
| Samuel Gompers Trades, 22d & Bartlett Sts.<br>Fourth floor drafting room                                  | 846.00      |

Exterior

|                                                   |          |
|---------------------------------------------------|----------|
| Grattan, Shrader & Grattan Sts.                   | 4,487.00 |
| Junipero Serra, Highland Ave. & Holly Park Circle | 2,144.00 |
| McKinley, S.W. corner 14th & Castro Sts.          | 3,976.00 |
| Sarah B. Cooper, corner Lombard & Jones Sts.      | 7,925.00 |

Miscellaneous

|                                                                                   |                     |
|-----------------------------------------------------------------------------------|---------------------|
| Laguna Honda, 7th Ave., bet. Irving & Judah Sts.<br>Exterior painting             |                     |
| Fairmount, Chenery St., bet. Randall & 30th Sts.<br>Exterior painting             |                     |
| Excelsior, Excelsior St., bet. Paris & London Sts.<br>Interior painting           | 16,186.50           |
| Starr King, 25th & Utah Sts.-exterior painting                                    |                     |
| Cabrillo, 24th Ave. bet. Balboa & Cabrillo Sts.<br>Interior and exterior painting | 19,800.00           |
|                                                                                   | <u>\$353,478.15</u> |

Department of HealthSan Francisco Hospital

|                                                    |            |
|----------------------------------------------------|------------|
| Asphalt tile flooring, Ward Buildings 1, 2, 3, & 4 | \$5,571.00 |
| New cork stair treads                              | 5,963.00   |
| New duct work and lint catcher                     | 4,094.00   |
| Repairs of the main entrance gates                 | 1,594.00   |

Laguna Honda Home

|                                                        |          |
|--------------------------------------------------------|----------|
| Asphalt tile flooring in the male attendants' building | 794.50   |
| Repairs to the roofs of the kitchen wing building      | 2,043.00 |
| Repairs to the roofs of nurses' and infirmary building | 3,222.41 |

Miscellaneous

|                                                                             |                    |
|-----------------------------------------------------------------------------|--------------------|
| Harbor Emergency Hospital, alterations                                      | 3,093.80           |
| Harbor Emergency Hospital, painting                                         | 1,175.00           |
| Hassler Health Home, Redwood City<br>New boiler and accessories             | 10,200.00          |
| Health Center Building, interior painting                                   | 10,432.00          |
| Health Center Building, replacement of the<br>hot water risers and branches | 8,793.00           |
|                                                                             | <u>\$56,975.71</u> |

Fire Department

|                                                                                               |                 |
|-----------------------------------------------------------------------------------------------|-----------------|
| S.F.F.D. Engine No. 37 (this bid rejected, lack of funds)                                     |                 |
| S.F.F.D. Engine No. 41 & No. 2                                                                |                 |
| Exterior and interior painting                                                                | \$ 9,283.78     |
| Repairs to steel smoke stack at the Central Heating Plant, N.E. cor. McAllister & Larkin Sts. | <u>2,500.00</u> |
|                                                                                               | \$11,783.78     |

Hall of Justice

|                                        |                 |
|----------------------------------------|-----------------|
| Repairs to the Hall of Justice         | \$24,169.00     |
| Alterations and additions to Room #207 | <u>3,332.00</u> |
|                                        | \$27,501.00     |

City Hall

|                                                           |                 |
|-----------------------------------------------------------|-----------------|
| Board of Supervisors, alterations to offices of the Clerk | \$ 1,277.00     |
| Board of Supervisors, painting of the Supervisors' office | 1,490.00        |
| Controller's large office, interior painting              | 1,590.00        |
| Law Library, 4th floor, shelving                          | 1,989.50        |
| Recorder's office, relocating counters                    | 3,652.68        |
| Traffic Fines Bureau, alterations to Rm. 164              | <u>1,790.00</u> |
|                                                           | \$11,789.18     |

Miscellaneous

|                                                                                             |                 |
|---------------------------------------------------------------------------------------------|-----------------|
| Central Fire Alarm Station, dismantling of the air raid shelter located in Jefferson Square | \$ 3,343.00     |
| The Legion of Honor Building, installation of acoustical tile in the offices                | 840.00          |
| San Francisco Retirement Board, 460 McAllister St. Alterations                              | 31,576.49       |
| Veterans' Building, partial interior painting                                               | <u>3,870.00</u> |
|                                                                                             | \$39,629.49     |

RECAPITULATION, WORK COMPLETED

|                      |                  |
|----------------------|------------------|
| Board of Education   | \$353,478.15     |
| Department of Health | 56,975.71        |
| Fire Department      | 11,783.78        |
| Hall of Justice      | 27,501.00        |
| City Hall            | 11,789.18        |
| Miscellaneous        | <u>39,629.49</u> |
|                      | \$501,157.31     |

Contracts Under Construction & Work in ProgressBoard of Education

|                                                                                                                |           |
|----------------------------------------------------------------------------------------------------------------|-----------|
| Abraham Lincoln high school site, boring of test holes                                                         | \$ 650.00 |
| Aptos Junior high, retreading main stairway                                                                    | 919.00    |
| " " " additions                                                                                                | 50,000.00 |
| Columbus school, repairs                                                                                       | 12,977.00 |
| Commodore Stockton school, additional play yard area                                                           | 32,514.00 |
| James Lick, Jr. high, refinishing gymnasium floors                                                             | 1,424.00  |
| Lake Merced School, additions                                                                                  | 25,000.00 |
| Lowell high, new plaster cornice                                                                               | 9,573.00  |
| Polytechnic high, West Portal, and McKinley schools                                                            |           |
| Cork pinning spaces                                                                                            | 31,231.00 |
| Resurfacing stair treads                                                                                       | 4,521.00  |
| Paul Revere school (old building)                                                                              |           |
| Resurfacing stair treads and landings                                                                          | 1,080.00  |
| San Francisco Junior College, horticultural facilities                                                         | 78,000.00 |
| Yerba Buena school, resurfacing stair treads and landings                                                      | 4,500.00  |
| Government surplus prefabricated steel buildings                                                               |           |
| For use as class rooms at Lawton, Bay View, Candlestick Cove, Ulloa, Francis Scott Key, and Bret Harte schools | 68,000.00 |

Roofing:

|                                                                 |           |
|-----------------------------------------------------------------|-----------|
| Daniel Webster school, new roof                                 | 4,134.00  |
| Junipero Serra school, repairs to roof                          | 18,000.00 |
| Galileo high, repairs to roof                                   | 7,000.00  |
| Lowell high, repairs to roof                                    | 8,655.00  |
| Polytechnic high, new composition shingle roof on shop building | 7,821.00  |

Painting (schools):

|                                                          |           |
|----------------------------------------------------------|-----------|
| Abraham Lincoln high, exterior                           | 2,424.00  |
| Bryant, waterproofing and painting                       | 7,562.00  |
| Commerce high, interior                                  | 23,390.00 |
| Commodore Sloat, interior                                | 11,042.00 |
| Daniel Webster, exterior                                 | 3,592.00  |
| Denman Jr. high, exterior                                | 5,341.96  |
| Golden Gate, exterior                                    | 3,220.00  |
| James Lick Jr. high, Boys' & Girls' gymnasiums, interior | 6,700.00  |
| Laguna Honda, interior                                   | 7,777.00  |
| Le Conte, exterior                                       | 2,743.00  |
| Lincoln, interior and exterior                           | 7,148.00  |
| Marshall, interior                                       | 6,696.00  |
| Miraloma, exterior                                       | 1,661.00  |
| Hillcrest, exterior                                      | 2,266.00  |
| Paul Revere, painting                                    | 9,090.00  |
| Patrick Henry (new addition)                             | 2,929.00  |
| Polytechnic high, and gymnasiums, interior               | 58,351.00 |
| Portola Junior high, exterior                            | 6,280.88  |
| Samuel Gompers' Trades, waterproofing and painting       | 16,225.00 |
| San Francisco Jr. College, exterior                      | 20,263.00 |
| Sheridan, interior                                       | 10,000.00 |
| Yerba Buena, interior                                    | 4,500.00  |

City Hall

|                                                     |           |
|-----------------------------------------------------|-----------|
| Alterations to Rooms 215-215A and 218               | 3,596.99  |
| Iron work of the City Hall, painting exterior       | 5,392.00  |
| Alterations to Assessor's office                    | 6,000.00  |
| Air conditioning equipment, Telephone Exchange room | 31,000.00 |

Fire Department

|                                                                           |             |
|---------------------------------------------------------------------------|-------------|
| S.W.cor. of 19th & Folsom, boring of testholes                            | \$ 1,000.00 |
| Fire brick lining for smoke stacks at pumping Sta. #1                     | 6,691.25    |
| S.F.F.D. Engine #15, interior & exterior painting                         | 2,940.00    |
| S.F.F.D. Engine House No. 44, new sheet metal roof                        | 2,323.00    |
| Installation of steel walkways, railways and guards<br>Pumping Station #1 | 4,951.00    |

Police Department

|                                                      |           |
|------------------------------------------------------|-----------|
| Repairs to Central Police Station and Traffic Bureau | 48,756.73 |
| Repairs to Northern Police Station                   |           |
| Repairs to Richmond Police Station                   | 18,305.75 |

Hall of Justice

|                                                      |          |
|------------------------------------------------------|----------|
| Repairing stair treads                               | 1,168.00 |
| Repairs to one passenger elevator                    | 1,719.25 |
| Switchboard work at Hall of Justice & County Jail #1 | 2,998.00 |

Juvenile Court

|                                                                                             |           |
|---------------------------------------------------------------------------------------------|-----------|
| Water Cooling Tower, Log Cabin Ranch for Boys                                               | 538.15    |
| Farm Group Buildings and road work, Log Cabin Ranch for<br>Boys, La Honda, San Mateo County | 47,000.00 |

Miscellaneous

|                                                    |           |
|----------------------------------------------------|-----------|
| Civic Auditorium, terrazzo floor (Polk Hall lobby) | 1,245.00  |
| Hospitality House, Civic Center                    | 21,000.00 |

Public HealthSan Francisco Hospital

|                                                                                                                                                                                           |             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Replacement of cold and hot water piping systems<br>for group of buildings known as Nurses' home<br>(main group), Administration Building,<br>Tubercular Building, and Isolation Building | \$97,000.00 |
| Plumbing work for new lavatories, children's ward                                                                                                                                         | 6,000.00    |
| Hot water heaters, pumps, piping systems, etc.<br>Tubercular and Isolation Buildings                                                                                                      | 20,000.00   |
| Repairs and alterations to Administration Building                                                                                                                                        | 1,600.00    |
| Extension of existing dry standpipes to property lines                                                                                                                                    | 15,997.00   |

Laguna Honda Home

|                                                                           |          |
|---------------------------------------------------------------------------|----------|
| Repointing terra cotta, Nurses' Building                                  | 350.00   |
| Stainless steel sheving and alterations for<br>dining room and bread room | 6,464.00 |
| Exterior painting Ward Building "B-C-D and G"                             | 7,447.00 |

Miscellaneous

|                                                                                        |        |
|----------------------------------------------------------------------------------------|--------|
| Furnishing and installing gasoline storage system<br>at the Alemany Emergency Hospital | 832.00 |
| Installation of acoustical tile in Room 106, Public<br>Health Building                 | 326.00 |
| Asphalt tile flooring, Harbor Emergency Hospital                                       | 400.00 |

|                                                                       |               |
|-----------------------------------------------------------------------|---------------|
| TOTAL EXPENDITURE for Work under Construction and<br>Work in Progress | \$ 948,241.96 |
|-----------------------------------------------------------------------|---------------|

Work Under Preparation

|                                                                                                                                   |                |
|-----------------------------------------------------------------------------------------------------------------------------------|----------------|
| Abraham Lincoln high school, extension<br>Weihe, Frick & Kruse, Architects                                                        | \$3,500,000.00 |
| Francis Scott Key school, additions<br>Wm. Mooser, Architect                                                                      | 86,000.00      |
| Balboa high school, restoring machine shop fire damage<br>Bureau of Architecture, Architect                                       | 27,000.00      |
| George Washington high school, temporary practice<br>football field and tract<br>Bureau of Architecture, Architect                | 25,000.00      |
| San Francisco Junior College, West Campus Building<br>Alterations and structural changes<br>Bamber & Reid, Engineer and Architect | 133,000.00     |
| Lawton School, additions<br>Mario J. Ciampi, Architect                                                                            | 325,000.00     |
| Samuel Gompers Trades school, Annex - Ford Building<br>A. W. Earl, Structural Engineer<br>Bureau of Architecture, Architect       | 1,000,000.00   |
| San Miguel Elementary school, alterations                                                                                         | 6,636.00       |
| Sheridan & Starr King schools,<br>Portable frame class rooms                                                                      | 15,000.00      |
| Boring of test holes at the trade school building site                                                                            | 900.00         |

Sunset Recreation Center

|                                                                     |            |
|---------------------------------------------------------------------|------------|
| Junior high school<br>Thomsen & Wilson, Architects                  | 400,000.00 |
| Sunset Elementary school<br>(Architect not named as yet)            | 300,000.00 |
| Recreation Field and Community Center<br>Wm. G. Merchant, Architect | 250,000.00 |
| Health Building<br>Bureau of Architecture, Architect                | 75,000.00  |
| Branch Library<br>Harry Thomsen, Architect                          | 150,000.00 |

Juvenile Department

|                                                                   |              |
|-------------------------------------------------------------------|--------------|
| Men's toilet building for Log Cabin Ranch for Boys<br>at La Honda | 20,509.00    |
| New Juvenile Home building<br>Wm. H. Merchant, Architect          | 1,000,000.00 |



Department of Health

|                                                      |             |
|------------------------------------------------------|-------------|
| Central Emergency, alterations to ambulance entrance | \$ 5,000.00 |
|------------------------------------------------------|-------------|

Miscellaneous

|                                                       |          |
|-------------------------------------------------------|----------|
| Placing the Howard statue of whales on Telegraph Hill | 5,000.00 |
|-------------------------------------------------------|----------|

Fire Department

|                            |            |
|----------------------------|------------|
| Engine House No. 10        |            |
| Joseph S. Gould, Architect | 150,000.00 |

|                           |            |
|---------------------------|------------|
| Engine House No. 11       |            |
| William Mooser, Architect | 150,000.00 |

|                              |            |
|------------------------------|------------|
| Engine House No. 27          |            |
| Ambrose & Spencer, Architect | 150,000.00 |

|                                   |            |
|-----------------------------------|------------|
| Engine House No. 30               |            |
| Bureau of Architecture, Architect | 150,000.00 |

|                                   |                  |
|-----------------------------------|------------------|
| Chemical No. 12                   |                  |
| Bureau of Architecture, Architect | <u>45,000.00</u> |

|                              |                 |
|------------------------------|-----------------|
| TOTAL Work Under Preparation | \$ 7,969,045.00 |
|------------------------------|-----------------|

Bids Received but not Awarded Due to Shortage of Funds

|                                              |               |
|----------------------------------------------|---------------|
| Mission Police Station, general construction | \$ 178,500.00 |
|----------------------------------------------|---------------|

RECAPITULATION

|                                                        |                   |
|--------------------------------------------------------|-------------------|
| Contracts under construction and work in progress      | \$ 948,241.96     |
| Work under preparation                                 | 7,969,045.00      |
| Bids received but not awarded due to shortage of funds | <u>178,500.00</u> |

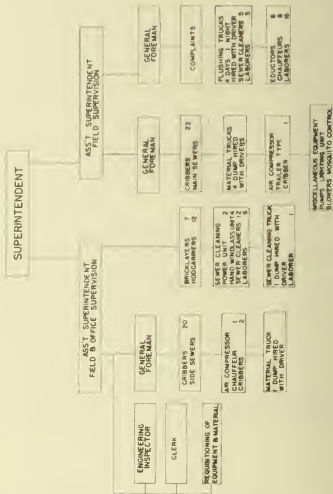
|  |                |
|--|----------------|
|  | \$9,095,786.96 |
|--|----------------|

|                |                   |
|----------------|-------------------|
| Work completed | <u>501,157.31</u> |
|----------------|-------------------|

|                                               |                |
|-----------------------------------------------|----------------|
| TOTAL of activities for fiscal year 1946-1947 | \$9,596,944.27 |
|-----------------------------------------------|----------------|

# ORGANIZATION CHART

BUREAU OF SEWER REPAIR  
DEPARTMENT OF PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO



APPROVED BY: *[Signature]*  
DIRECTOR OF PUBLIC WORKS

BUREAU OF SEWER REPAIR

Emile F. Muheim, Superintendent

FUNCTIONS

The City and County of San Francisco is situated on the northern tip of a peninsula bounded on the west by the Pacific Ocean, on the north by the Golden Gate Strait and on the east by San Francisco Bay. Crowded into this 40-square-mile area live 812,000 people, plus 220,000 who work in San Francisco but live in other Bay Area communities.

The general topography of the city is hilly, the highest point being approximately 900 feet above sea level. Gravity, therefore, is relied upon to convey sewage to the various outfalls. The drainage areas are predominantly North and East, discharging raw sewage into the bay. The western slope discharges into a treatment plant. The climate is moderate, with an annual rainfall of 22 inches.

The present system consists of one treatment plant, eight pumping plants, and over 760 miles of main sewers, varying in size from 8" V.C.P. to 24" V.C.P.; 24" to 5'6" prefabricated, reinforced concrete pipe; 3' x 5' brick sewers; reinforced concrete sewers, up to 3-compartment, 8'6" x 11'0"; and some recently installed 24" composition pipe, together with the necessary manholes and catch-basins. Side sewers are 6" V.C.P. for residence use; 8", 10", 12" and 15" for commercial use. These sewers are installed by city forces at the direct expense of the property owners, with the exception of those constructed under the supervision of the Bureau of Engineering prior to the construction of the pavement.

The maintenance of the sewage collection system is under the Bureau of Sewer Repair, while the maintenance of the Richmond-Sunset Sewage Treatment Plant and eight sewage pumping stations are under the Bureau of Engineering. The operative facilities of the Bureau of Sewer Repair are employed whenever tanks, sumps, screens,



Debris taken from 18" cast iron pipe  
near Parkmerced area



Hand rig for cleaning  
all types of sewers

etc. of these installations need cleaning.

Catchbasins are cleaned by the eight eductors, assigned to regular districts. Main sewers are cleaned by improved power equipment, using the cable-and bucket system that raises the muck to the street surface to be hauled away.

Portions of the industrial and downtown districts, bordering the bay, are in a tidal area. Previously, these areas were worked at low tide. In most instances, this did not work out well, due to the short space of time between tides, and because the low tide occurred outside of working hours, necessitating overtime pay.

With the method now employed, the necessary equipment is installed in the sewer at low tide; cleaning is then continuous.

#### PERSONNEL

|           |                           |
|-----------|---------------------------|
| 1         | Superintendent            |
| 2         | Assistant Superintendents |
| 3         | General Foremen           |
| 1         | Engineering Inspector     |
| 1         | Clerk                     |
| 7         | Bricklayers               |
| 12        | Hod carriers              |
| 50        | Cribbers                  |
| 29        | Laborers                  |
| 9         | Chauffeurs                |
| <u>17</u> | <u>Sewer Cleaners</u>     |
| 132       | Total personnel           |

#### ORGANIZATION

The Annual Salary Ordinance has established certain rules and regulations with regard to working conditions. These are too numerous to mention in this report.

The general working conditions are as follows.

Under the Superintendent are two Assistant Superintendents; reporting to them are three General Foremen. The crews are employed eight hours per day, Monday through Friday, with a night shift on duty from 4:30 p.m. until 12:30 a.m.

On Saturdays, Sundays, and holidays, a maintenance truck is on duty, taking care of lanterns and the safety of current jobs. This truck is on call after hours every day in the year.

Starting early in October, according to the weather, and continuing throughout the winter, an emergency crew, consisting of a panel-delivery-type truck and driver, a sewer cleaner and a laborer, is on duty Saturdays, Sundays, and holidays from 4:00 p.m. until midnight. This crew is equipped to take care of the routine winter sewer failures.

An assistant superintendent or a general foreman is on call at his home at all hours of the day or night throughout the year.

### EQUIPMENT

|                   |   |                                                                                 |
|-------------------|---|---------------------------------------------------------------------------------|
| Owned by City     | 8 | Elgin Eductors for cleaning catchbasins                                         |
|                   | 1 | Air compressor, mounted on truck, for breaking pavement                         |
|                   | 1 | LeRoy air compressor, trailer type for breaking pavement                        |
|                   | 2 | Power-driven sewer cleaning units for use on main and pipe sewers               |
|                   | 1 | Pump, trailer type } to pump manholes                                           |
|                   | 2 | Pumps, portable } or flood ditches                                              |
|                   | 1 | Blower, portable, to furnish or suction air out of sewers where men are working |
|                   | 1 | Lighting unit, portable                                                         |
|                   | 6 | Passenger automobiles for administrative and supervisory personnel              |
|                   |   | Windlasses                                                                      |
|                   |   | Cables, buckets, rods                                                           |
|                   |   | Sewer lamps, flares, lanterns, barricades                                       |
| Contractual basis | 6 | Dump trucks for handling material                                               |
|                   | 5 | Panel delivery trucks for sewer maintenance equipment                           |

### ROUTINE OPERATIONS

A typical working day starts at about 7:00 a.m. when the general foremen arrive at the office to get the orders ready for the men arriving at 8:00 a.m. Before 8:00 a.m. many of the field crews ring in for material, additional instructions, or assignment to a new location. At 8:00 a.m. the eductor crews are dispatched to their regular districts or go on special assignments. Flushing crews go out on complaints, investigations, or their regular sewer maintenance. At 10:00 a.m. these men ring in for further instructions. In general, this routine is repeated in the afternoon.

During the day, the clerk answers telephone calls from citizens reporting holes in the street, plugged-up catch-basins, and sewers not functioning; and articles dropped into catch-basins or through plumbing fixtures, such as keys, rings, false teeth, and precious stones. Many of these articles are retrieved and returned to their owners.

At 4:45 p.m. the eductor and flushing crews report to the office with the results of the day's work. These reports are tabulated and distributed to the assistant superintendent or general foreman responsible for that particular phase of the work. By this time, the night crew has reported and their instructions have been issued. Five o'clock sees the day officially closed. Complaints coming in after this hour and up until 12:30 a.m. are taken care of by the night crew. After 12:30 a.m. and until 8:00 a.m. the following morning, the material truck driver is on call for routine complaints. Complaints of a more serious nature are referred to the assistant superintendent or general foreman on call.

#### NUMBER OF JOBS

|                                                           |        |
|-----------------------------------------------------------|--------|
| Complaints investigated                                   | 5,874  |
| Repairing pipe sewers                                     | 334    |
| Repairing and installing side sewers                      | 1,452  |
| Repairing brick sewers                                    | 121    |
| Building manholes                                         | 42     |
| Repairing manholes                                        | 94     |
| Building catch-basins                                     | 10     |
| Repairing catch-basins                                    | 190    |
| Catch-basins cleaned by eductors                          | 8,727  |
| Cubic yards of silt removed from catch-basins by eductors | 12,240 |
| Number of catch-basins cleaned by hand                    | 107    |
| Cubic yards of silt removed from catch-basins by hand     | 65     |
| Cubic yards of silt removed from sewers                   | 1,440  |

#### SEWER REPAIR JOBS BY CALENDAR YEARS

| <u>Year</u> | <u>Number of Jobs</u> | <u>Feet of pipe replaced</u> |
|-------------|-----------------------|------------------------------|
| 1940        | 317                   | 5,225                        |
| 1941        | 361                   | 5,555                        |
| 1942        | 318                   | 5,253                        |
| 1943        | 254                   | 3,665                        |
| 1944        | 257                   | 4,430                        |
| 1945        | 347                   | 5,240                        |
| 1946        | 372                   | 5,024                        |



New Power Unit 111 for Cleaning  
all types of sewer



## REPAIRS TO MAIN SEWERS - 1946-47

SUMMARY OF COSTS

|                                             | <u>Labor</u> | <u>Material</u> | <u>Trucks</u> | <u>Spec.<br/>Equip.</u> | <u>Auto.</u> | <u>Compr.</u> | <u>Total</u> |
|---------------------------------------------|--------------|-----------------|---------------|-------------------------|--------------|---------------|--------------|
| Repairs to pipe sewers                      | 88,291.35    | 15,129.55       | 9,036.70      |                         |              |               | 112,457.60   |
| Repairs to brick sewers                     | 39,212.00    | 3,959.98        | 1,484.17      |                         |              |               | 44,656.15    |
| Bldg. manholes & catch-basins               | 13,808.19    | 3,313.41        | 1,403.08      |                         |              |               | 18,524.68    |
| Repairs to manholes                         | 5,459.98     | 1,112.38        | 321.59        |                         |              |               | 6,893.95     |
| Repairs to catch-basins                     | 13,859.13    | 1,833.05        | 1,100.40      |                         |              |               | 16,792.58    |
| Repairs to concrete sewers                  | 1,391.91     | 75.93           | 29.47         |                         |              |               | 1,497.31     |
| Eductors                                    | 73,959.50    | 9,857.73        |               |                         |              |               | 83,817.23    |
| Sewer flushing                              | 40,959.39    | 2,442.56        | 21,241.87     |                         |              |               | 64,643.82    |
| Sewer cleaning                              | 44,912.25    | 3,158.50        | 3,196.54      |                         |              |               | 51,267.29    |
| Hand cleaning catch-basins                  | 873.81       | 125.36          | 102.33        |                         |              |               | 1,101.50     |
| Miscellaneous                               | 10,148.13    | 538.67          | 4,148.51      |                         |              |               | 14,835.31    |
| NORMAL EXPENDITURES                         | \$332,875.64 | \$41,547.12     | \$42,064.66   |                         |              |               | \$416,487.42 |
| Special Sewer Cleaning Equipment            |              |                 |               | 686.13                  |              |               | 686.13       |
| Retroactive pay from<br>7/1/46 to 1/31/47   | 12,384.40    |                 |               |                         |              |               | 12,384.40    |
| Retroactive truck charge<br>1/30 to 3/31/47 |              |                 | 361.00        |                         |              |               | 361.00       |
| Two Ford 8 cyl. sedans                      |              |                 |               |                         | 2,432.29     |               | 2,432.29     |
| One LeRoy air compressor                    |              |                 |               |                         |              | 2,272.43      | 2,272.43     |
| TOTAL EXPENDITURES                          | \$345,260.04 | \$41,547.12     | \$42,425.66   | \$686.13                | \$2,432.29   | \$2,272.43    | \$434,623.67 |

SIDE SEWER INSTALLED AND REPAIRED - 1946-47SUMMARY OF COSTS

| <u>No.<br/>S/S</u> | <u>Deposit</u> | <u>Labor</u> | <u>Matl.</u> | <u>Cartage</u> | <u>Insptn.</u> | <u>Paving</u> | <u>Extras</u> | <u>Over-<br/>head</u> | <u>Total</u> | <u>Refund</u> | <u>Excess</u> |
|--------------------|----------------|--------------|--------------|----------------|----------------|---------------|---------------|-----------------------|--------------|---------------|---------------|
| JUL 86             | 8650.00        | 4429.31      | 491.10       | 257.00         | 152.00         | 1189.80       | 101.19        | 828.79                | 7459.19      | 1606.49       | 415.68        |
| AUG 119            | 14035.00       | 6132.82      | 694.05       | 335.00         | 234.00         | 1800.00       | 100.78        | 1160.22               | 10442.87     | 3808.86       | 216.73        |
| SEP 84             | 9470.00        | 4322.31      | 493.50       | 249.00         | 162.00         | 1251.45       | 215.72        | 835.97                | 7529.95      | 2237.96       | 297.91        |
| OCT 162            | 15262.00       | 6885.07      | 784.80       | 404.00         | 310.00         | 2085.30       | 138.94        | 1325.88               | 11933.99     | 3683.09       | 355.08        |
| NOV 123            | 13150.00       | 5897.49      | 617.70       | 346.00         | 236.00         | 1830.60       | 122.83        | 1131.32               | 10181.94     | 3120.56       | 152.50        |
| DEC 137            | 15120.00       | 6481.12      | 636.90       | 357.00         | 236.00         | 1826.55       | 184.04        | 1214.43               | 10936.04     | 4403.03       | 219.07        |
| JAN 131            | 13620.00       | 6826.23      | 688.20       | 340.00         | 258.00         | 2587.80       | 133.68        | 1356.34               | 12210.25     | 1958.27       | 548.52        |
| FEB 148            | 16015.00       | 7821.89      | 867.90       | 276.00         | 292.00         | 3299.40       | 171.45        | 1603.88               | 14432.52     | 2004.21       | 421.73        |
| MAR 134            | 16345.00       | 7033.18      | 699.60       | 379.00         | 252.00         | 2990.40       | 202.56        | 1444.01               | 13000.75     | 3614.25       | 270.00        |
| APR 125            | 14405.00       | 6825.88      | 703.50       | 396.00         | 244.00         | 2772.80       | 85.44         | 1378.46               | 12406.08     | 2483.48       | 484.56        |
| MAY 104            | 13240.00       | 5587.30      | 578.70       | 360.00         | 202.00         | 2174.90       | 79.03         | 1122.74               | 10104.67     | 3483.67       | 348.34        |
| JUN 99             | 13600.00       | 6666.70      | 507.00       | 344.00         | 192.00         | 2270.45       | 213.95        | 1273.90               | 11468.00     | 2570.90       | 438.90        |
| 1452               | 74909.30       |              |              |                |                | 26079.45      |               | 14675.94              |              | 34974.77      |               |
| 162912.00          |                |              | 7762.95      | 4163.00        | 2766.00        |               | 1749.61       |                       | 132106.25    |               | 4169.02       |

BUREAU OF STREETS

P. W. King, General Superintendent

The Bureau of Streets is responsible for the maintenance, repair, and cleaning of all streets and boulevards, including State Highways within the City and County of San Francisco, except those streets abutting the waterfront and which are under the jurisdiction of the State Board of Harbor Commissioners as established by statutes of the Legislature of the State of California. It is also responsible for the operation and maintenance of bridges at Third Street and Channel, Fourth Street and Channel, and Third Street and Islais Creek.

The Bureau is divided into two Divisions: Street Repair and Street Cleaning. Operations of each division will be presented separately.

DIVISION OF STREET REPAIRFUNCTIONS

Many worn-out street surfaces were repaved with an asphalt wearing surface. Minor repairs were made to brick, basalt block, and concrete pavements. New concrete gutters, sidewalks, and curbs were constructed. Some granite curbs in the industrial and commercial districts were re-dressed and reset.

Street pavements had become unsightly due to cracks developing in the wearing surface. In some cases the crack had become so wide and the "lips" along the edge of the crack so high that a strip about eight inches wide was entirely cut out and the space filled with fine gravel and emulsified asphalt.

Surface heaters were used for heating the asphalt on streets where it became necessary to remove rolls, and then sheet asphalt surface was placed after the burned pavement was raked off.

No planing of bituminous surfaces was done during the past fiscal year.

This division resurfaces the track areas for the Municipal Street Railway System, operates the Municipal Asphalt Plant and the bridges, removes fallen trees from streets after storms, clears away land slides and removes sand from the streets in sections of the City where the property has not been built upon.

### PERSONNEL

The personnel as of June 30, 1947, was as follows:

|                         |                                                                                        |
|-------------------------|----------------------------------------------------------------------------------------|
| Supervising             | 1 General superintendent (also in charge of Street Cleaning Division)                  |
|                         | 1 Supervisor                                                                           |
|                         | 3 General foremen                                                                      |
| Per Diem                | 1 Foreman - Asphalt finisher                                                           |
|                         | 8 Sub-foremen - Asphalt finishers                                                      |
|                         | 12 Asphalt finishers                                                                   |
|                         | 36 Asphalt workers                                                                     |
|                         | 2 Labor foremen                                                                        |
|                         | 44 Laborers (inclu. pneumatic tool operators)                                          |
|                         | 17 Chauffeurs                                                                          |
|                         | 4 Granite cutters                                                                      |
|                         | 3 Cement finishers                                                                     |
|                         | 4 Cement finishers' helpers                                                            |
|                         | 2 Pavers                                                                               |
|                         | 3 H & P Engineers                                                                      |
| Municipal Asphalt Plant | 1 Foreman                                                                              |
|                         | 1 Dryerman                                                                             |
|                         | 1 Mixerman                                                                             |
|                         | 1 Laborer                                                                              |
|                         | 3 Asphalt workers                                                                      |
|                         | 1 Engineer                                                                             |
|                         | 1 Laborer (Night watchman for boilers)                                                 |
| Bridges                 | 1 Chief operating engineer ( $\frac{1}{2}$ time bridges, $\frac{1}{2}$ time buildings) |
|                         | 10 Operating engineers                                                                 |
|                         | 1 Operating engineer (relief)                                                          |
|                         | 10 Watchmen                                                                            |

### ORGANIZATION

|                        |                                 |
|------------------------|---------------------------------|
| Supervising            | 1 General superintendent        |
|                        | 1 Supervisor                    |
|                        | 3 General foremen               |
| Municipal Railway work | 2 Sub-foremen asphalt finishers |
|                        | 2 Asphalt finishers             |
|                        | 8 Asphalt workers               |
|                        | 10 Laborers                     |
|                        | 2 Chauffeurs                    |
| Crack Sealing          | 2 Sub-foremen asphalt finishers |
|                        | 8 Laborers                      |
|                        | 2 Pneumatic tool operators      |
|                        | 2 Chauffeurs                    |

|                                                                 |                                                                                                                                                  |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Asphalt Repairs                                                 | 1 Foreman asphalt finisher<br>4 Sub-foremen asphalt finishers<br>10 Asphalt finishers<br>27 Asphalt workers<br>3 H & P Engineers<br>8 Chauffeurs |
| Brick and Basalt<br>Block repairs                               | 2 Pavers                                                                                                                                         |
| Broken and depressed<br>curbs                                   | 2 Granite cutters<br>4 Laborers                                                                                                                  |
| Dressing curbs                                                  | 2 Granite cutters                                                                                                                                |
| Sidewalks and<br>angular corners                                | 3 Cement finishers<br>4 Cement finishers' helpers<br>1 Chauffeur                                                                                 |
| Clean-up                                                        | 1 Labor foreman<br>1 Asphalt worker<br>12 Laborers<br>2 Chauffeurs                                                                               |
| Yards (Miscel-<br>laneous work)                                 | 2 Laborers                                                                                                                                       |
| Lights and barri-<br>cades                                      | 1 Truck driver                                                                                                                                   |
| Compressor Units                                                | 2 Pneumatic tool operators<br>2 Chauffeurs                                                                                                       |
| Dumps                                                           | 1 Labor foreman                                                                                                                                  |
| Miscellaneous work,<br>off sick, loaned to<br>other departments | 2 Laborers                                                                                                                                       |

#### Equipment

- 17 5-ton trucks
- 1 1-1/2 ton pick-up truck
- 3 Obsolete 5-ton Pageol trucks
- 1 8-ton Austin gas roller
- 1 8-ton Galeon gas roller
- 2 2-1/2 ton Littleford rollers
- 1 #60 McCormick Deering tractor
- 1 Sand loader
- 1 Hand-operated Austin road blade
- 3 Bitumul spray outfits
- 1 Mud jack
- 2 Surface heaters - power-driven
- 1 Surface heater - hand-operated
- 2 Surface heaters - small hand burners
- 2 Hand operated asphalt and weed burners
- 2 Truck mounted 105 compressors
- 1 Truck mounted 105 compressors (waiting for chassis)
- 1 Trailer 105 compressor
- 1 300-gal. oil supply trailer
- Miscellaneous small equipment

8 Hired trucks

Equipment on order

3 G.M.C. 5-ton trucks  
4 1-1/2 ton pick-up trucks  
1 1-1/2 ton chassis  
2 5-ton trucks

In the reconstruction and widening of Guerrero Street, the Division hauled and piled usable granite curb at a cost of \$.167 per lineal foot against a cost of \$2.00 per lineal foot for new curb.



Street surfaces are continually being damaged by heavy truck trailers the front support of which, when not attached to the tractor, is only a small steel wheel resting directly on the pavement. This wheel should bear upon a heavy steel plate of sufficient size to distribute the load instead of sinking into the pavement and destroying the surface. The owners have been warned against this procedure, but so far we have had no results.

The viaduct on 20th Street between Tennessee and Iowa Streets was constructed by the Atchison, Topeka and Santa Fe Railway Company and has always been maintained by them. This year, the Company felt their obligation was ended but the City does not agree with their contention. Due to its rough condition, it was

necessary to make immediate repairs and this Division did the work which in some places required the removal of the entire surface and base, a thickness of eight inches. An accurate cost of the work was kept and turned over to the City Engineer for submission to the Railway Company. A suit will probably be necessary to decide the matter of who is responsible for the maintenance.



20th St. viaduct  
between Tennessee  
& Iowa Sts.

Before and during  
repairing



WORK DONE

Eighteenth Street near its intersection with Market Street Extension was the scene of several accidents, but the hazardous condition has been rectified by the removal of the unused streetcar tracks and covering the basalt pavement, which existed between tracks, with asphalt.

The rails on the Third Street Viaduct which were not in use were removed and the rail trenches repaved with asphalt. The basalt block pavement was left in place as the viaduct is used only when the trains switching in the yards halt Third Street traffic. The main reason for removing the rails was that they were in good condition and could be used for repair work at other places.

Repairs to the street surface for which the Municipal Railway is responsible was the largest item of work done by the division. The private company which previously operated the street railways had neglected the maintenance of roadbeds and the Municipal System is confronted with an immense backlog of work.

The total expenditures of the Division for the fiscal year 1946-1947 were \$726,708.93, consisting of four main items, to wit:

|                            |                     |
|----------------------------|---------------------|
| Bridges                    | \$ 87,736.27        |
| Asphalt Plant              | 92,763.73           |
| Interdepartmental services | 237,898.78          |
| General Repairs            | 308,310.15          |
|                            | <u>\$726,708.93</u> |



Annual sand problem - unimproved property



STATISTICAL DATA

## Cost of Operating Bridges

|           | <u>Wages</u>       | <u>Retire-<br/>ment</u> | <u>Power</u>      | <u>Misc.</u>      | <u>Total</u>       |
|-----------|--------------------|-------------------------|-------------------|-------------------|--------------------|
| 1946      |                    |                         |                   |                   |                    |
| July      | \$ 6,895.21        | \$353.36                | \$137.44          | \$404.62          | \$7,790.63         |
| August    | 6,596.34           | 368.80                  | 129.24            | 197.74            | 7,292.12           |
| September | 7,183.25           | 389.39                  | 157.28            | 43.25             | 7,773.17           |
| October   | 6,820.82           | 373.89                  | 123.48            | 103.01            | 7,421.20           |
| November  | 6,859.38           | 374.96                  | 177.79            | 220.74            | 7,632.87           |
| December  | 6,437.70           | 356.18                  | 222.07            | 71.61             | 7,087.56           |
| 1947      |                    |                         |                   |                   |                    |
| January   | 6,482.15           | 346.82                  | 240.87            | 169.23            | 7,239.07           |
| February  | 6,755.25           | 365.24                  | 221.99            | 22.65             | 7,365.13           |
| March     | 6,178.47           | 329.62                  | 192.25            | 328.21            | 7,028.55           |
| April     | 6,211.05           | 338.93                  | 176.54            | 345.40            | 7,071.92           |
| May       | 6,355.38           | 341.04                  | 163.08            | 200.19            | 7,059.69           |
| June      | <u>6,401.74</u>    | <u>336.49</u>           | <u>134.38</u>     | <u>97.42</u>      | <u>6,970.03</u>    |
|           | <u>\$79,176.74</u> | <u>\$4,274.72</u>       | <u>\$2,076.41</u> | <u>\$2,204.07</u> | <u>\$87,731.94</u> |

These costs divided among bridges as follows:

|           | <u>Third<br/>Street</u> | <u>Fourth<br/>Street</u> | <u>Islais<br/>Creek</u> |                    |
|-----------|-------------------------|--------------------------|-------------------------|--------------------|
| 1946      |                         |                          |                         |                    |
| July      | \$2,724.04              | \$2,404.92               | \$2,661.67              |                    |
| August    | 2,614.15                | 2,329.01                 | 2,348.96                |                    |
| September | 2,510.59                | 2,408.80                 | 2,853.78                |                    |
| October   | 2,575.99                | 2,399.27                 | 2,445.94                |                    |
| November  | 2,607.04                | 2,612.97                 | 2,412.86                |                    |
| December  | 2,420.10                | 2,352.38                 | 2,315.08                |                    |
| 1947      |                         |                          |                         |                    |
| January   | 2,587.53                | 2,354.81                 | 2,296.73                |                    |
| February  | 2,691.88                | 2,385.41                 | 2,287.84                |                    |
| March     | 2,453.47                | 2,316.16                 | 2,258.92                |                    |
| April     | 2,639.66                | 2,295.80                 | 2,136.46                |                    |
| May       | 2,445.64                | 2,404.21                 | 2,209.84                |                    |
| June      | <u>2,275.64</u>         | <u>2,335.94</u>          | <u>2,358.45</u>         |                    |
|           | <u>\$30,545.73</u>      | <u>\$28,599.68</u>       | <u>\$28,586.53</u>      | <u>\$87,731.94</u> |

Sixth St.  
\$4.33

Cost of Operating Municipal Asphalt Plant

|           | Output<br>(Tons) | Cost of Labor<br>and Materials | Cost<br>Per ton |
|-----------|------------------|--------------------------------|-----------------|
| 1946      |                  |                                |                 |
| July      | 1,452.75         | \$ 5,939.59                    | \$3.996         |
| August    | 2,522.00         | 7,924.15                       | 3.142           |
| September | 2,030.90         | 6,138.16                       | 3.022           |
| October   | 3,000.10         | 8,825.21                       | 2.941           |
| November  | 1,924.45         | 6,757.75                       | 3.511           |
| December  | 1,602.70         | 6,374.26                       | 3.977           |
| 1947      |                  |                                |                 |
| January   | 2,134.45         | 7,427.28                       | 3.479           |
| February  | 2,084.10         | 7,437.06                       | 3.568           |
| March     | 2,102.50         | 7,714.20                       | 3.621           |
| April     | 3,019.90         | 9,891.18                       | 3.275           |
| May       | 2,644.75         | 9,112.79                       | 3.445           |
| June      | 2,949.65         | 9,222.10                       | 3.126           |
|           | <u>27,468.25</u> | <u>\$92,763.73</u>             | <u>\$3.377</u>  |

During July, 1946, and March, 1947, the Asphalt Plant was operated on two Sundays. A separate unit cost was figured for these two days (9.006 and 6.654) in order to show normal unit cost for the balance of the month.

Interdepartmental Work

|                                    |                 |                     |
|------------------------------------|-----------------|---------------------|
| Major streets, paving              | 875,679 sq. ft. | \$ 48,648.97        |
| Side sewers, paving                | 47,546 " "      | 29,423.33           |
| Municipal Railway, paving          | 1,019,826 " "   | 134,710.48          |
| Municipal Railway, curb job        | Accident        | 174.82              |
| Building repair                    |                 | 2,025.42            |
| State Highway #2, paving           | 25,433 sq. ft.  | 2,592.05            |
| " " " crack sealing                | 145,650 lin.ft. | 2,275.96            |
| " " #66, paving                    | 14,286 sq. ft.  | 1,383.42            |
| " " " crack sealing                | 49,300 lin.ft.  | 805.77              |
| " " #56                            | 2,967 sq. ft.   | 356.71              |
| Park Department, paving            | 174,280 " "     | 8,364.34            |
| " " equipment rental               |                 | 515.95              |
| " " material purchase              |                 | 22.24               |
| Recreation Department, paving      | 10,500 sq. ft.  | 583.58              |
| " " laborers                       |                 | 648.40              |
| Board of Education, paving         | 22,050 sq. ft.  | 1,361.28            |
| " " " miscellaneous                |                 | 62.00               |
| Police sockets                     | 48              | 545.15              |
| Public Works                       |                 | 361.82              |
| Calhoun Street                     |                 | 48.09               |
| Lake Merced Trestle                |                 | 103.90              |
| Hassler Health Home, crack sealing | 56,400 lin.ft.  | 1,299.01            |
| Controller, labor                  |                 | 306.60              |
| Finance and Records, labor         |                 | 160.14              |
| Portola and Evelyn, safety zone    |                 | 619.35              |
|                                    |                 | <u>\$237,898.78</u> |

General Repairs to Streets

|                               | <u>Area</u>        | <u>Expense</u>      |
|-------------------------------|--------------------|---------------------|
| Asphalt Repairs               | 1,815,118 sq. ft.  | \$142,271.68        |
| Brick Pavements               | 7,841 " "          | 6,551.71            |
| Concrete Pavement Repairs     | 3,964 " "          | 2,833.58            |
| Crack Sealing Pavements       | 1,797,470 lin. ft. | 32,974.49           |
| Basalt Pavement Repairs       | 494 sq. ft.        | 307.66              |
| Granite Curb Redressed        | 5,279 lin. ft.     | 7,629.48            |
| Granite Curb Reset            | 11,561 " "         | 18,352.68           |
| Concrete Curb Reset           | 8,939 " "          | 10,490.84           |
| Main Sewers Repaved           | 28,447 sq. ft.     | 15,192.88           |
| *Miscellaneous Work           |                    | 15,172.88           |
| Sidewalk Repairs              | 65,430 sq. ft.     | 25,672.23           |
| Temporary Roads               |                    | 6,165.67            |
| Paving for Dept. of Elections | 1,155 sq. ft.      | 573.76              |
| Paving for Fire Department    | 798 " "            | 294.05              |
| Miscellaneous Purchases       |                    | 4,136.61            |
| Removal of Granite Curb       | 15,400             | 4,769.10            |
| Misc. Purchase of Equipment   |                    | 5,607.40            |
| Duck Bumps Set                | 90                 | 539.05              |
| Duck Bumps Removed            | 8                  | 12.44               |
| Grade and Bitumul Sidewalk    | 200                | 196.10              |
| Equipment Purchases           |                    | 653.53              |
| Patching Stairways            |                    | 72.64               |
| Retroactive Pay               |                    | <u>7,839.69</u>     |
|                               |                    | <u>\$308,310.15</u> |

\*Miscellaneous work covers the cartage of equipment, removal of sand in Sunset and Parkside Districts, removal of trees and debris after storms, cleaning up slides, repairing various stairways and structures, cleaning and repairing various spillways, etc.

DIVISION OF STREET CLEANING

The Division has not had a full complement of labor since early in the war period and is still short of adequate automotive equipment but the situation is improving. It has been impossible to secure metal for street cans and the shortage shows little signs of improving. The use of can sheds has been of great aid in this respect.

The work of the division could be greatly reduced by a greater degree of cooperation from other agencies and the general public.

Contractors on street projects are extremely careless and neither the inspectors on street projects nor the police seem to be able to enforce the regulations that they shall keep the materials from spilling from the trucks onto the streets. Garbage trucks sort their loads in the street and leave a portion of each load on the street. Daily and weekly publications along with advertising mediums leave their wrappings and copies blown by our regular winds, to add to the work of this Division. Many citizens use the streets, sidewalks, and vacant lots for the dumping of their garbage, debris, etc. It is apparent that countless people do not avail themselves of garbage service.

The greatest improvement in equipment for the Street Cleaning Division has been the truck known as the "Refuse Getter." It loads from the rear and is mechanically hoisted to the top of the body where it is pounded down all day by the vibration received in transportation with the result that it is packed in a solid mass when it reaches the dump.

The "Heil" product has an improvement over the present truck by eliminating the chain lifting device and replacing it with steel arms. We had trouble with the chain due to the stretching and need of replacing of links.

The gutter broom now used is smaller than the ordinary Elgin

or Austin Sweeper and although the capacity is less, the efficiency is greater which compensates for the decrease in capacity.

### FUNCTIONS

The Division is responsible for the sanitation and cleaning of approximately 1600 curb miles of paved streets within the City and County, five pedestrian underpasses, Stockton Street Tunnel, numerous pedestrian stair and passageways, as well as vacant City-owned lots in built-up sections of the City. All of the street sweepings and debris collected are hauled away to two dumping grounds where they are disposed of by the fill and cover method. A few of the trucks forced to pick up dumped garbage and refuse from the produce district deliver to the garbage ramp at 6th and 16th Sts.

### PERSONNEL

The personnel as of June 30, 1947, was as follows:

|             |                                                                           |
|-------------|---------------------------------------------------------------------------|
| Supervisory | 1 General Superintendent (also in charge of<br>Division of Street Repair) |
|             | 1 Supervisor                                                              |
|             | 4 District Directors                                                      |
| Per diem    | 12 Labor sub-foremen                                                      |
|             | 45 Chauffeurs                                                             |
|             | 1 Gardener                                                                |
|             | 260 Laborers                                                              |

### ORGANIZATION

The regular work week is five days or 40 hours a week and the night shift. Skeleton crews working 4 hours are employed Saturdays and Sunday mornings.

The City is divided into four major districts, each under a district director. The districts are divided into sub-districts which are swept by gangs and truck crews under the supervision of labor sub-foremen. The localities requiring daily or near daily service are swept by blockmen.

OPERATIONS

|                      | <u>Five days<br/>&amp; nights</u> | <u>Saturday<br/>A. M.</u> | <u>Saturday<br/>P. M.</u> | <u>Sunday<br/>A. M.</u> |
|----------------------|-----------------------------------|---------------------------|---------------------------|-------------------------|
| Blockmen             | 132                               | 27                        | 15                        | 30                      |
| Sweeping Gangs       | 10                                |                           |                           |                         |
| Can Truck Routes     | 6                                 | 1                         | 1                         | 3                       |
| Utility Truck Routes | 4                                 | 1                         |                           |                         |
| Paper Route Trucks   | 8                                 |                           |                           |                         |
| Motor Flusher Routes | 7                                 | 1                         | 1                         | 1                       |
| Motor Sweeper Routes | 6                                 | 1                         |                           | 2                       |

During the regular five day and night work, the Division uses 132 blockmen, 10 sweeping gangs, and covers 7 motor flusher routes, 6 motor sweeper routes, 6 can routes, 4 utility routes, and 8 paper truck routes. Saturday and Sunday work is limited to locations which traffic and pedestrians use the most. On Saturday morning 27 blockmen, 1 can truck, 1 utility truck, 1 motor flusher are used.

Three garages are in advantageously chosen locations: 11th & Bryant Sts., 2350-19th Ave. (Sunset District), and 1725 Lombard St. (North Beach-Marina District). The garage on 19th Avenue can not be used to house our mechanical loader dump trucks until the entrance is changed.

The cost of operating the Division, including labor, material, and equipment for the fiscal year 1946-47 was \$992,752.

Equipment

- 6 Dump trucks, Mechanical loaders - 13½ cu.yds.  
(used on can routes)
- 22 Dump trucks
- 3 Flat Bed Rack Trucks
- 6 Motor Flushers
- 8 Motor Sweepers
- (15 pieces of motor equipment were repainted  
during the year)
- 110 Street Buggies
- 1400 Street Cans
- 115 Street Sheds
- 18 Wire Baskets
- (The street sheds, 250 street cans, and several  
buggies were repainted during the year)

Equipment on Order

- 2 Garwood Dump trucks, 11-3/4 cu.yds. capacity
- 1 Heil Dump Mechanical Loader, 13½ cu.yds. capacity
- 1 Austin Patrol Motor Sweeper
- 1 Motor Flusher - 2500 gallon capacity

BUREAU OF ACCOUNTS

F. W. McKenzie, Supervisor

FUNCTIONS

The Bureau of Accounts controls the budgetary and financial activities of the Department. It is the point of origin of documents dealing with the disbursement of funds, and their guidance through required procedures until final liquidation.

The operating functions of the Bureau embrace control of payroll procedure, personnel records and field-timekeeping; purchase order requisitions, sub-storeroom and inventories; automotive expenditures and gasoline and tire records; work order job costs and invoicing; side sewer job and refund accounts; State gas tax subventions; the cash revolving fund for the Department; the stores revolving fund; budget preparation and control; operations of the Corporation Yard telephone exchange; and the supplying of clerical service to all Bureaus of the corporation yard.

Reports of operations in building repair, sewers, street repair, and street cleaning are prepared monthly, for the Director, by the Bureau of Accounts from its records.

Job costs pertaining to property of the City, damaged by outside causes and falling within the scope of the department's control, are compiled and forwarded for collection.

PERSONNEL

The personnel of the Bureau as of June 30, 1947, consisting of 27 employees, was as follows:

- 1 Supervisor in charge of the Bureau
- 1 Head Clerk
- 2 Bookkeepers
- 4 Senior Clerks
- 11 General Clerks
- 3 General Clerk-Stenographers
- 4 General Clerk-Typists
- 1 Telephone Operator

ORGANIZATION

The bureau has a central office in the City Hall. The handling of operating accounts is done at the corporation yard where

the majority of the employees are assigned.

The work is divided into three well defined classes as:

Payrolls and Personnel with 2 senior clerks and 5 general clerks in the office. Three general clerks act as field-timekeepers for payroll verification and also act as paymasters on semi-monthly payrolls, delivering pay warrants to employees on the job.

Purchasing and Stores with 1 senior clerk and 2 general clerks.

Gas Tax Subventions with 1 senior clerk and 1 general clerk.

#### OPERATIONS

A sub-storeroom and material yard are operated for the supplying of materials for the varied activities of the department.

The Stores Revolving Fund was increased during the past year from \$50,000 to \$60,000 and is designed to permit the purchase in advance of constantly-used materials. Plumbing supplies, electrical items, paints, hardware, lumber, glass, tools, sewer pipe, brick, cement, castings, etc. are charged out to the various branches of the work as used. Controls have been established which facilitate monthly reimbursements for goods withdrawn, and stores' records are maintained on a perpetual inventory basis subject to annual physical check.

The Departmental Cash Revolving Fund of \$1,500 is used by the Bureau for payment of small bills and transportation charges, and enables workmen on jobbing operations to make cash purchases at neighborhood stores. All transactions are conducted under controls set up by ordinance.

Detailed records are maintained of all expenditures, particularly of operations performed under work order procedure. The Charter requires that all elements of indirect and supervisory costs be considered and made part of the final job cost, so indirect labor is pro-rated on an exact percentage basis, as are overhead charges for accident compensation, sick leave, vacation, retirement, etc. These items are accumulated in reserves to meet the requirements designated. Charges for small tools and shop supplies used in work order operations are placed against the miscellaneous reserve.



WORK DONE

The Bureau compiled and forwarded for collection bills in 105 cases in the amount of \$4,253.95 involving damages to bridges, automotive equipment, street structures, traffic signals under the control of the Department, and prisoner-damage to police stations; 951 individual deposits were filed by property owners in the amount of \$132,106 for installation and repair on 1452 separate house connections; 16,778 transactions were handled involving the delivery of various items from the sub-storeroom and material yard to the job; 4648 requisitions and 3766 delivery orders were issued to vendors.

STATISTICAL DATABudgeted funds subject to control and appropriated to -

|                                         |              |
|-----------------------------------------|--------------|
| Bureau of Accounts                      | \$51,566.00  |
| Bureau of Architecture                  | 53,866.00    |
| Bureau of Building Inspection           | 100,648.00   |
| Bureau of Building Repair               | 632,173.00   |
| Central Permit Bureau                   | 24,712.00    |
| Bureau of Engineering                   | 9,499,125.00 |
| Sewage Disposal Plant                   | 121,890.00   |
| Sewage Pumping Stations                 | 50,110.00    |
| General Office                          | 191,877.00   |
| Bureau of Sewer Repair                  | 455,633.00   |
| Bureau of Streets -                     |              |
| Street Repair                           | 580,085.00   |
| Street Cleaning                         | 896,819.00   |
| Bridges                                 | 101,510.00   |
| Gas Tax (Special Road Improvement)      | 287,800.00   |
| Special Gas Tax-Street Improvement Fund | 800,000.00   |
| Gas Tax - Street Construction           | 633,458.00   |

\$14,481,272.00

Interdepartmental service under work order procedure for the following divisions of the City government:

|                              |               |
|------------------------------|---------------|
| Schools                      | \$ 511,827.45 |
| Health                       | 167,013.59    |
| Recreation                   | 33,674.87     |
| Library                      | 17,148.00     |
| Public Building Improvements | 55,127.00     |
| Gas Tax Accounts             | 954,462.10    |
| Engineering                  | 81,333.13     |
| Sewage Plants                | 3,850.00      |
| Public Utilities             | 118,008.60    |
| General Office               | 76,268.31     |
| Sewer Bonds                  | 377,077.32    |
| Public Welfare               | 60,000.00     |
| Fire Department              | 35,260.00     |
| Miscellaneous                | 103,011.00    |

2,594,061.37

Side sewer installations and repair expenditures132,106.00

TOTAL transactions for the year

\$17,207,439.37

BUREAU OF BUILDING REPAIR

R. A. Chisholm, Superintendent

FUNCTIONS

This Bureau is primarily a maintenance and repair organization and does not undertake any major construction. The main objective is to give service to all City Departments asking for it.

The Bureau furnishes labor and materials for the repair, alterations and painting of City-owned buildings that are under the control of the Director of Works. It performs similar services for the Board of Education and other municipal departments under work order procedure.

It furnishes labor and material for traffic striping, pedestrian lane markings at street intersections, and markings for loading and parking zones on curbs, bus stop and safety zones.

The Bureau in addition to the above furnishes personnel for the operation of the City Hall, Hall of Justice, Health Center Building, Emergency Hospitals, Police Stations, and Fire Houses, and is also responsible for the operation of the Civic Center Power House which furnishes heat to the Civic Auditorium, Public Library, Health Center Building, and the City Hall.

PERSONNEL

The personnel includes one superintendent, one assistant superintendent, and six general foremen supervising 160 to 164 mechanics, supplemented by additional seasonal workers. Thirteen building crafts are represented in the alteration and repair work; in the operational work 106 persons are employed.

The classification of employees is:

|                 |                            |
|-----------------|----------------------------|
| <u>Repairs:</u> | 1 Superintendent           |
|                 | 1 Assistant Superintendent |
|                 | 6 General Foremen          |
|                 | 27 Plumbers                |
|                 | 14 Steam Fitters           |
|                 | 12 Sheet Metal Workers     |
|                 | 16 Electricians            |
|                 | 40 Painters                |

13-15 Cement Finishers and Cement Workers  
25 Carpenters  
4 Locksmiths  
4 Glaziers  
2 Plasterers  
1 Tile Setter  
2-4 Brick layers  
Additional seasonal workers

### ORGANIZATION

#### Plumbing Division - 27 men

There are from 8 to 10 men on regular assignments to the Fire Department, City Hall, San Francisco Hospital, County Jail #2, Hall of Justice, and Laguna Honda Home, and at different times during the day additional help may have to be sent to these buildings to take care of emergency calls. Miscellaneous repairs to the school buildings, consisting of repairs to toilet facilities, etc. require 6 to 8 men. On work orders for repairs and new installation of plumbing facilities from 6 to 8 men are constantly employed; but due to labor and material shortage, we are behind. The Recreation Department keeps two men, with a truck, busy every day just taking care of emergency calls. In connection with the Bayshore Freeway project and the widening of Army Street, the City has acquired a group of buildings which it must keep in repairs on work orders from the Real Estate Department. We are constantly sending not only plumbers but electricians, locksmiths, steamfitters, and sheet metal mechanics to keep these tenants happy. Calls from the Emergency Hospitals, Health Buildings, and Women's Jail Quarters received priority over other calls.

#### Steamfitters Division - 14 men

Four men are regularly assigned to City Hall, Hall of Justice, Laguna Honda Home and San Francisco Hospital. The Board of Education keeps 3 to 4 men busy on emergency repairs at all times, besides others on special work orders for renewal of steam lines, traps and vacuum equipment. The steam lines around the City Hall area have to be serviced and repaired at least once a year. The

Municipal Railway, Fire Department, Emergency Hospitals, Public Welfare and Real Estate Department keep the rest of the crew busy.

Sheet Metal Division - 12 men

No men of this craft are assigned to any particular building. The work is mainly repairs of cornice work, ventilation systems, tile roofs and metal doors of various buildings. The Division makes street cans, buggy pans, and scoops for the Street Department. The Board of Education daily requisitions men to take care of emergency conditions. The Industrial Accident Commission made an inspection of all machinery equipment and ordered all dangerous moving parts such as belts, shafts, couplings, etc. to be safeguarded.

Electrical Division - 16 men

Two men are assigned regularly to the City Hall and Hall of Justice. The City Hall man takes care of emergency calls from the Health Building and Central Emergency Hospital. The man at the Hall of Justice takes care of the County Jail, and City Prisons, and Harbor Emergency Hospital. Five men are assigned to the Board of Education on their monthly work order and one on a special work order for their Training School. The San Francisco Airport has a man almost continuously, as does the San Francisco Hospital. Many departments changed their lighting systems from old style fixtures to fluorescent fixtures which work has required the continuous employment of two men. The balance of the employment is on work orders from other departments, mainly, the Water Department, Health Department, Public Utilities, Fire Department, etc.

Painting Division - 40 men

Four men are on regular assignment at the City Hall, San Francisco Hospital, and Fire Department.

There are 12 men on the street traffic painting under orders from the Engineering Bureau. They are required to work on Sundays,

and during the summer are out at daylight to do the work that is in the congested districts. Four men are on curb painting under orders from the Police Department; they operate from two trucks, covering different parts of the City. All of the metal letters, or stencils as they are called, that are necessary in this work are made up in the Sheet Metal Shop. Two men are on the Board of Education's regular monthly Miscellaneous Work Order, touching up all repair work of the other trades. There are from 12 to 14 men continually working on work orders from the School Department, Superior Court, Public Utilities (S.F. Airport), Public Welfare, Health Department, Public Works Budget, Purchasing, Real Estate, War Memorial, and various other departments. In connection with the change of lighting systems, nearly all of the rooms were cleaned up and repainted according to the recommendations of the lighting expert of the Pacific Gas & Electric Company.

Cement Division - 13 to 15 men

This division takes care of all requests from other divisions in this Bureau to assist in their work such as opening up ground for broken water pipes, choked sewers, drilling for electric conduits, and replacing walks and yards where so opened up. It has from 4 to 6 men working continually in school yards filling in depressions and bad cracks in the asphalt work. This division took over the maintenance of all street signs from the Department of Electricity which made it necessary to fit up a special storage and work shop. A truck had to be rented, and because of the accumulated work of the past few years, funds were soon exhausted. We have budgeted a truck and larger storage space for the new year.

Carpentry Division - 25 men

There are 6 to 7 men assigned regularly to the City Hall, Hall of Justice, San Francisco Hospital and Fire Department.

Five men work on miscellaneous schools' requisitions taking

care of all complaints, such as door and window repair, replacing door cheeks, cabinet work, yard benches, etc.

The remaining 10 to 15 men are always busy on work orders from other City Departments doing all kinds of alteration work, including bridge repair (replacing planking) and putting up and removing stands and bleachers on orders from the Chief Administrative Officer.

#### Miscellaneous Trades

Locksmiths - Four locksmiths are hard pressed to take care of emergency calls from all departments of the City, especially the Recreation Department with their gates and club houses being continually broken into. The School Department problem is very serious as the master keys are either lost or stolen, with the result that the schools are entered at night and badly damaged; and then comes the call to change all locks, and so it goes on and on.

Glasiers (4 men) - Just continually replacing broken glass, especially during vacation periods.

Plasterers (2 men), Tile Setter (1 man) - Busy on patching and repair work in all City-owned buildings.

Bricklayers (2 to 4 men) - These men work only during the school vacation period when the school boilers are re-bricked.

#### Equipment Purchased

- 3 Panel delivery trucks
- 1 Mercury sedan
- 1 Pipe threading machine
- 1 Portable arc welder
- 1 Key cutting machine

STATISTICAL DATA

Operations for the year entailed the following expenditures:

|                               |                 |               |
|-------------------------------|-----------------|---------------|
| Superintendence               | \$ 29,216.32    |               |
| *Building and yard operations | 343,741.09      |               |
| Automotive repairs            | <u>5,690.56</u> |               |
|                               |                 | \$ 378,647.97 |

Maintenance and repair of general government buildings performed with funds allocated to the Bureau consisted of:

|                                                 |                  |            |
|-------------------------------------------------|------------------|------------|
| Fire Stations                                   | \$ 23,844.90     |            |
| Police Stations                                 | 4,870.36         |            |
| County Jails                                    | 7,391.36         |            |
| Hall of Justice                                 | 14,864.59        |            |
| City Hall                                       | 28,740.69        |            |
| San Francisco Hospital and<br>Laguna Honda Home | 30,644.00        |            |
| Juvenile Detention                              | 1,503.13         |            |
| Miscellaneous Structures                        | <u>22,730.15</u> |            |
|                                                 |                  | 134,589.18 |

Work order performance appeared in three general subdivisions:

|                  |                   |                   |
|------------------|-------------------|-------------------|
| Schools          | \$392,190.00      |                   |
| Traffic striping | 103,417.00        |                   |
| Various          | <u>223,509.00</u> |                   |
|                  |                   | <u>719,116.00</u> |
|                  |                   | \$1,232,353.15    |

\*Engineers, watchmen, elevator operators, janitors, etc.

## APPENDIX I

SAN FRANCISCO'S HIGH POINTS

The following tabulation lists some of San Francisco's well-known hills and mountains and gives for each of them the elevation above City Datum, which is the official reference plane for all elevations in the City. To convert to elevation above mean sea level it is necessary to add 8.6 feet to each of the figures given.

|                                                      | <u>Elevation Above<br/>City Datum</u> |
|------------------------------------------------------|---------------------------------------|
| Buena Vista Park                                     | 569 feet                              |
| Telegraph Hill Boulevard                             | 274 "                                 |
| Mount Davidson                                       | 927 "                                 |
| Sutro Crest                                          | 909 "                                 |
| Twin Peaks North                                     | 903.8 "                               |
| Twin Peaks South                                     | 910.5 "                               |
| Russian Hill, Hyde, Greenwich,<br>& Filbert Sts.     | 294 "                                 |
| Nob Hill, Jones & Sacramento Sts.                    | 338 "                                 |
| Lone Mountain                                        | 392 "                                 |
| Bay View Park                                        | 500 "                                 |
| Mount Olympus                                        | 561.2 "                               |
| Golden Gate Heights                                  | 758 "                                 |
| Strawberry Hill, Golden Gate Park                    | 415 "                                 |
| Rincon Hill, First St. easterly<br>from Harrison St. | 108 "                                 |



## APPENDIX II

GRADES AND PAVEMENTS ON STEEPER STREETS

| <u>Street</u>  | <u>From<br/>Street</u> | <u>To<br/>Street</u> | <u>Distance<br/>feet</u>                        | <u>Grade<br/>%</u>                       | <u>Type of<br/>Pavement</u>    |
|----------------|------------------------|----------------------|-------------------------------------------------|------------------------------------------|--------------------------------|
| Arguello Blvd. | Irving                 | Parnassus Ave.       | 222                                             | 31.5                                     | Concrete                       |
| Filbert        | Leavenworth            | Hyde                 | 202                                             | 31.5                                     | Concrete                       |
| Broadway       | Taylor                 | Westerly             | 237.5                                           | 30.7                                     | Cobbles<br>walled off          |
| Kearny         | Broadway               | Vallejo              | 275                                             | 29.8                                     | Concrete<br>walled off         |
| Jones          | Union                  | Filbert              | 275                                             | 29                                       | Concrete                       |
| Duboce         | Alpine                 | Buena Vista          | 136                                             | 27.9                                     | Concrete                       |
| Ave.           | Terrace                | Ave.                 |                                                 |                                          |                                |
| Wisconsin      | 19th                   | 20th                 | 400                                             | 26.1                                     | Concrete                       |
| Jones          | Green                  | Union                | 275                                             | 26                                       | Concrete                       |
| 2nd Ave.       | Irving                 | Parnassus Ave.       | 322.29                                          | 26                                       | Basalt block                   |
| Webster        | Vallejo                | Broadway             | 275                                             | 26                                       | Asphalt<br>surface             |
| Duboce         | Divisadero             | Alpine               | 207.89                                          | 25                                       | Concrete                       |
| Ave.           |                        | Terrace              |                                                 |                                          |                                |
| Duboce         | Castro                 | Divisadero           | 165                                             | 25                                       | Concrete                       |
| Ave.           |                        |                      |                                                 |                                          |                                |
| Jones          | Pine                   | California           | 275                                             | 24.8                                     | Concrete                       |
| Filbert        | Kearny                 | Grant Ave.           | 412.5                                           | 24                                       | Concrete                       |
| Fillmore       | Vallejo                | Broadway             | 275                                             | 24                                       | Concrete                       |
| Taylor         | Pine                   | California           | 275                                             | 23.7                                     | Concrete                       |
| Taylor         | Union                  | Green                | 275                                             | 23.2                                     | Concrete                       |
| Kearny         | Union                  | Filbert              | 275                                             | 23.3                                     | Concrete                       |
| Mason          | Pine                   | California           | 275                                             | 22.2                                     | Concrete                       |
| 3d Ave.        | Irving                 | Parnassus Ave.       | 413.71                                          | 21.9                                     | Brick                          |
| Webster        | Green                  | Vallejo              | 275                                             | 21.8                                     | Brick                          |
| Divisadero     | Greenwich              | Filbert              | 275                                             | 21.8                                     | Concrete                       |
| Broadway       | Mason                  | Taylor               | 412.5                                           | 21.3                                     | Concrete                       |
| 19th           | De Haro                | Carolina             | 400                                             | 21                                       | Concrete                       |
| Taylor         | Filbert                | Union                | 275                                             | 21.4                                     | Concrete                       |
| Pierce         | Broadway               | Pacific Ave.         | 275                                             | 21                                       | Brick                          |
| Gough          | Jackson                | Washington           | 275                                             | 19.5                                     | Brick                          |
| Church         | 20th                   | 21st                 | 520                                             | 19                                       | Asphalt<br>surface             |
| Fillmore       | Green                  | Vallejo              | ( 25<br>75<br>175 )                             | ( 19.<br>24.6<br>25.4 )                  | Concrete                       |
| Duncan         | Sanchez                | Noe                  | ( 66.67<br>133.33<br>80.00<br>225.00<br>55.00 ) | ( 18.5<br>12.0<br>16.2<br>25.7<br>50.0 ) | Concrete<br>Walled off         |
| Noe            | 20th                   | Liberty              | 228                                             | 18.6                                     | Asphalt, basalt<br>blk. center |
| California     | Grant Ave.             | Stockton             | 412.5                                           | 18                                       | Concrete                       |
| Powell         | Bush                   | Pine                 | 275                                             | 17                                       | Brick                          |

## APPENDIX III

SAN FRANCISCO DATUM PLANE

San Francisco's City Base or datum plane, from which all official grades and elevations are measured, was first established in Order No. 350, approved June 20, 1853. Section 2 of the order stated: "That Drumm Street shall be the base, being the elevation of Pacific Street wharf and five feet above extreme high tide." In the following year it was determined that the adopted base was 6.7 feet above mean high tide.

According to the most recent determinations, San Francisco City Base is:

- 6.635 feet above mean High Tide in San Francisco Bay
- 8.535 feet above mean Bay level at North Point
- 8.616 feet above sea level datum of the United States  
Coast and Geodetic Survey
- 10.335 feet above mean Low Tide in San Francisco Bay

Elevations based on other datum planes used in the San Francisco Bay area may be converted to San Francisco City Base elevations by subtracting the following amounts:

|                                  |            |
|----------------------------------|------------|
| Alameda City                     | 5.122 feet |
| Oakland City and Alameda County  | 5.402 "    |
| Southern Pacific R.R. (S.F.)     | 5.735 "    |
| Berkeley City                    | 5.792 "    |
| Central Pacific datum            | 12.202 "   |
| U. S. C. & G. S. sea level datum | 8.616 "    |







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